

MACTECH

The Journal of Apple Technology

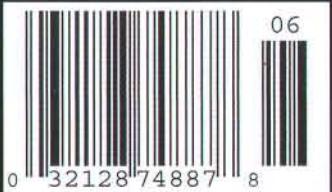
Here Comes the Flood: Taming Auto-Update



**WWDC 2011:
Wrapping It Up**

**Using Wireshark
to Explain
Nmap traffic**

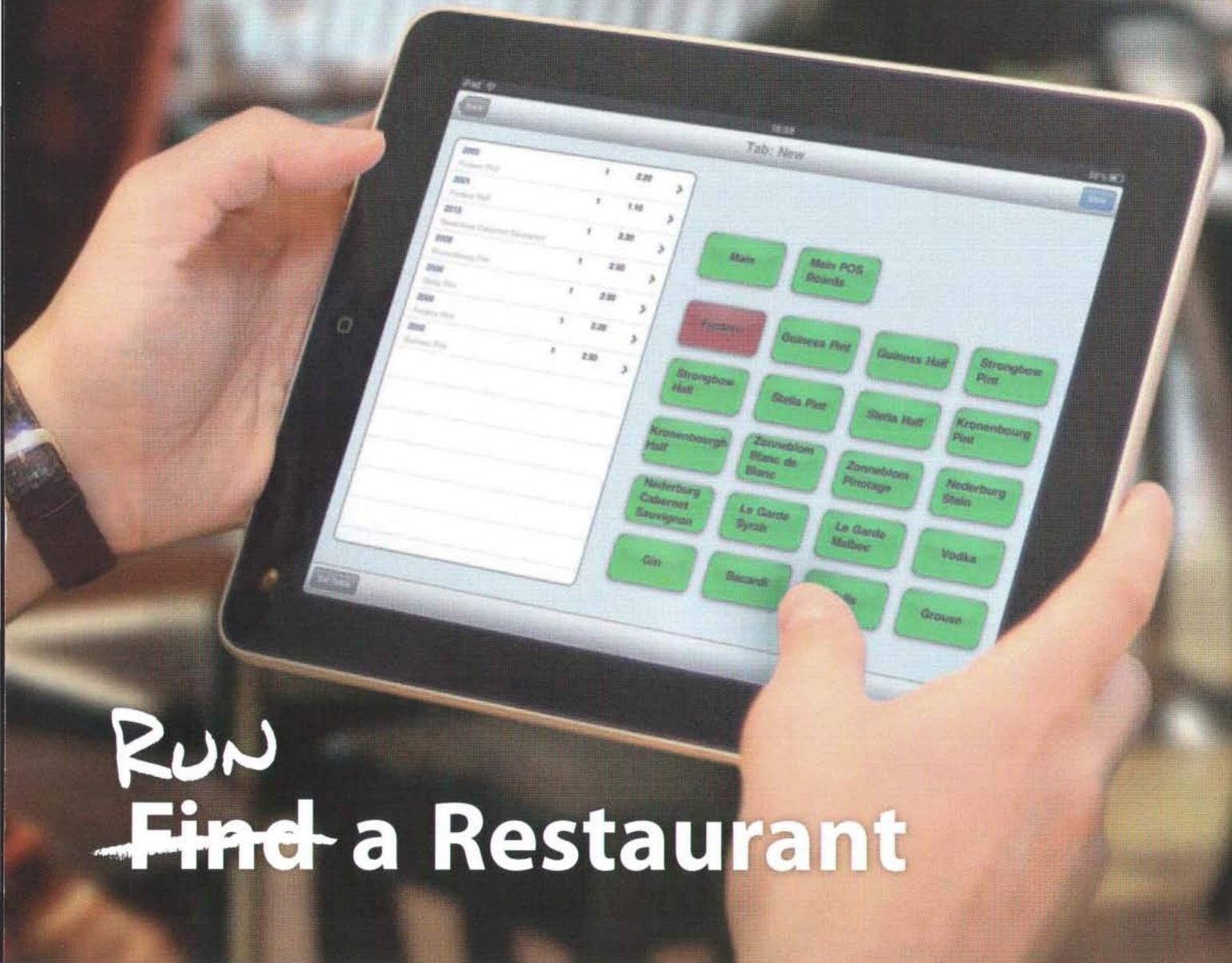
\$8.95 US, \$12.95 Canada



0 32128 74887 8

06

ISSN 1067-8360 Printed in U.S.A.



RUN Find a Restaurant

Ordering | Kitchen Printing | Reporting

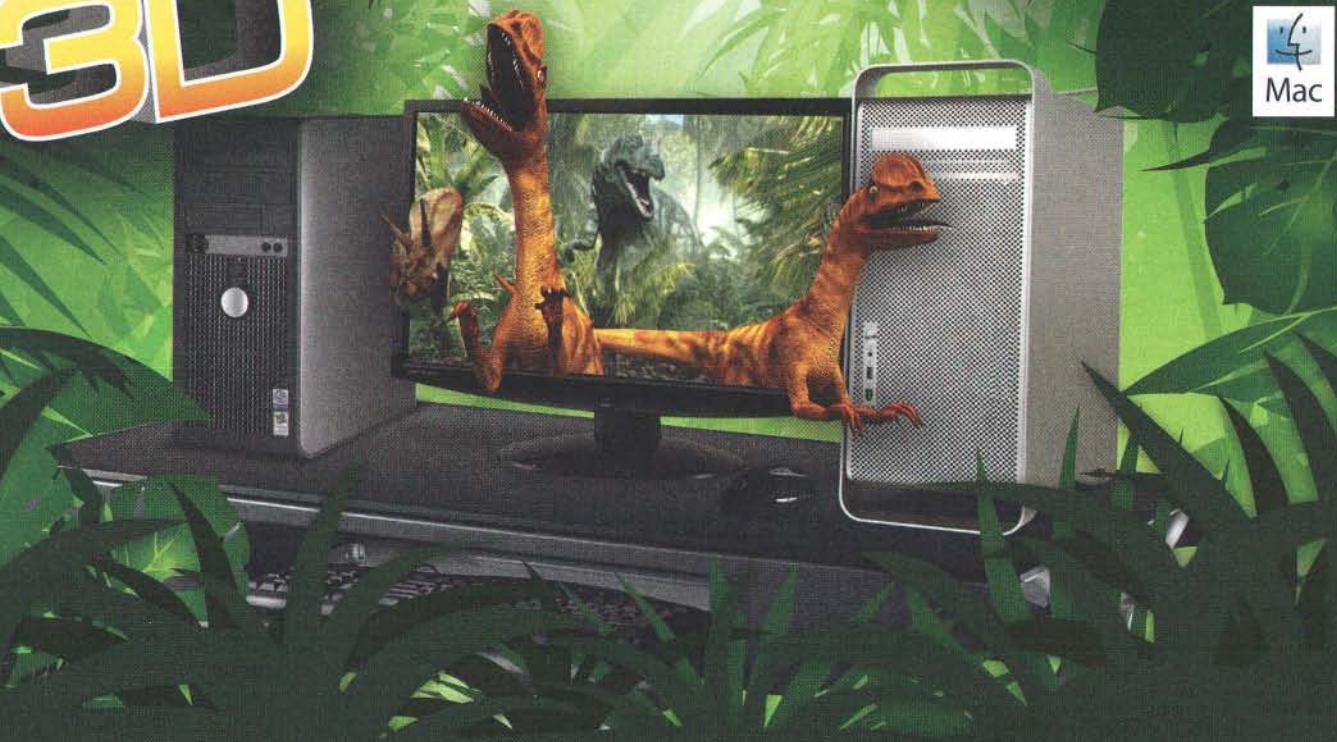
Tabs opened from graphical table view. Fast, accurate orders, including special requirements. Wireless printing to kitchen and for final bill. Improve your customer service with Restaurant by HansaWorld, for iPad.



Enterprise
by HansaWorld

Experience the Power of Control in 3D

NVIDIA.
3D VISION™
READY



IOGEAR 2-port Dual-Link DVI KVMP Pro Switch with 7.1 Audio

This powerful KVMP supports 3D graphics with NVIDIA® 3D VISION, is compatible with gaming keyboards and has an integrated 2-port USB 2.0 hub for peripheral sharing. Now users can control two computers and share multiple USB peripherals from a single keyboard, monitor, and mouse console. Increase efficiency and save equipment cost for applications where ultra-high video resolution, large or widescreen monitors are required such as:

- CAD (Computer Aided Design)
- CAM (Computer Aided Manufacturing)
- Medical / Surgical / Diagnostic Displays
- Desktop Publishing / Graphic Design
- Video Editing
- High-End Gaming



Share a professional quality monitor, keyboard, mouse and 7.1 surround sound system between two USB / DVI computers



Supports high-end 3D graphics with maximum video resolutions of:
- DVI Dual link: 2560 x 1600
- DVI Single link: 1920 x 1200



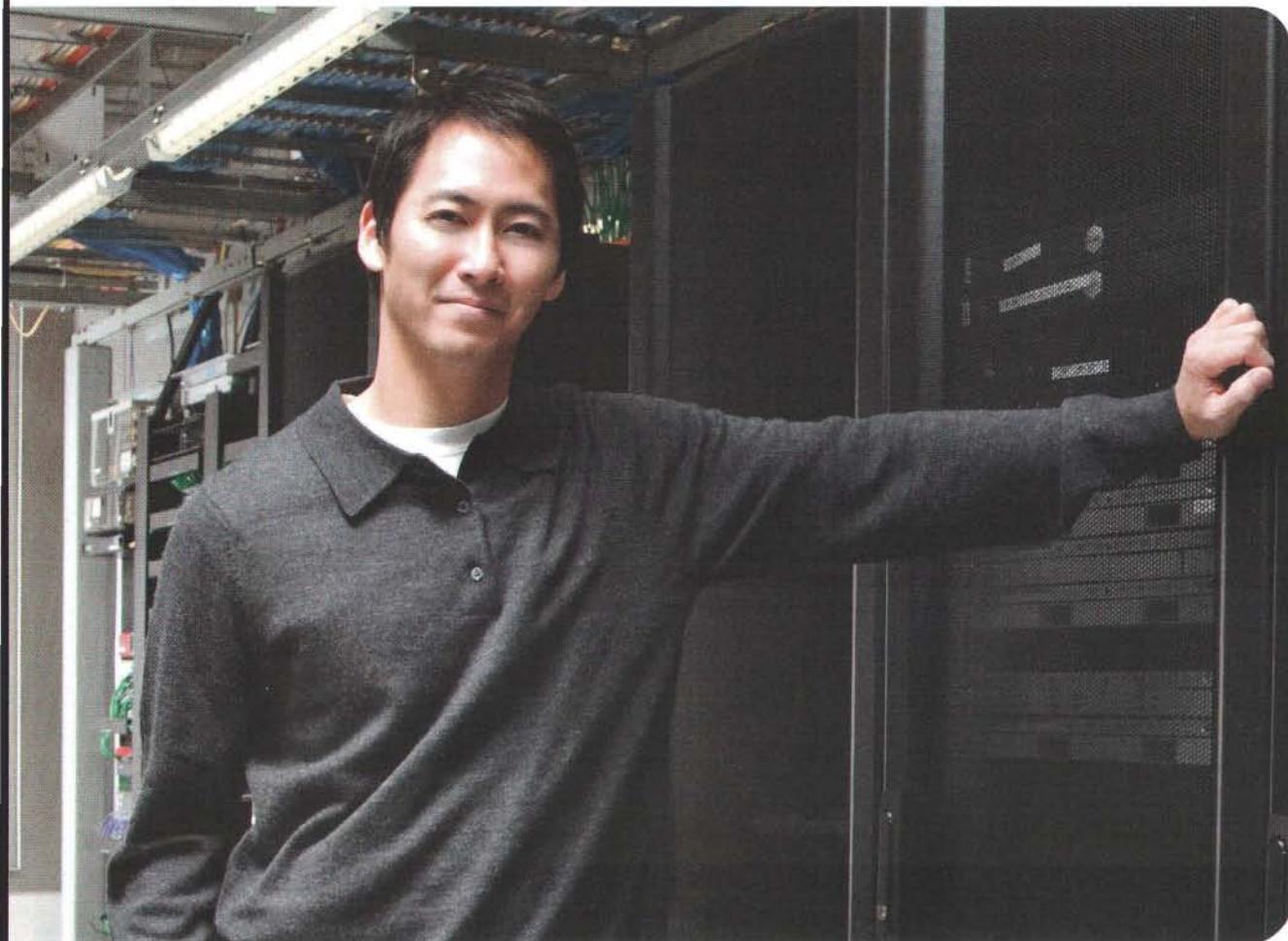
DynaSync® technology reads and remembers the monitor's parameters to eliminate delay or change of video resolution when switching between, or booting computers

Go Online!

For more information, go to iogear.com/mt/3dkvmp

*IOGEAR's DynaSync provides the EDID support for Windows 7

IOGEAR[®]
Convergence through Connectivity



Parallels Server for Mac 4.0

Fully utilize your Xserve, Mac Pro and Mac mini investment.

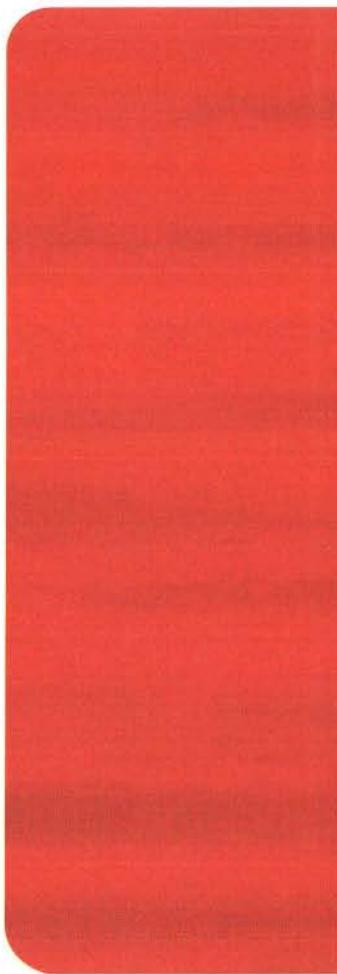
Consolidate and run any server software you choose.

- Full scale hypervisor solution with bare metal architecture
- Hardware-ready for seamless integration into existing IT infrastructures
- Built-in VM and multiple server management and maintenance tools
- Point and click migration of VM's between physical servers
- Integrated snapshots and incremental and full backups included

"Our district has already saved more than \$50,000 because Parallels Server for Mac eliminates the need for multiple servers. We anticipate more savings as well."

—Richard Bowler
Director of Technology
Hardin School District in Montana

To learn more, visit www.parallels.com/products/server/mac



My Mac **does** do Windows.

Parallels Desktop® 6 for Mac.

Simply Faster, Smarter and More Powerful Than Ever!

- New!** Get full control of your virtual machine with our all-new Parallels Mobile app for iPhone/iPad
- New!** Take advantage of all of the capabilities of your 64-bit Mac and enjoy our fastest virtual machine performance yet
- Enhanced!** Experience brilliant graphics capabilities in Windows applications whether you're a gamer, architect, designer or engineer
- New!** Immerse yourself in your favorite games, music and videos with rich 5.1 Surround Sound

For business or for home, Parallels is the #1 choice of customers worldwide*

To learn more, visit www.parallels.com/desktop today.





**@ScreenFlow Because it's simply epic.
Best Mac recording software ever.**



Record. Edit. Share

ScreenFlow is powerful, easy-to-use screencasting software for the Mac. With ScreenFlow you can record the contents of your entire monitor while also capturing your video camera, microphone and your computer audio. The easy-to-use editing interface lets you creatively edit your video, add additional images, text, music and transitions for a truly professional-looking video. The finished result is a QuickTime or Windows Media movie, ready for publishing to your Web site, blog or directly to YouTube or Vimeo.

Get a free trial at www.telestream.net/screenflow



Telestream.net

Version 3
coming soon

TABLE OF CONTENTS

WWDC 2011 Wrap Up by Edward Marczak	8
<i>Mac in the Shell</i>	
Ruby and the GUI, Part 2	
<i>Adding a real Cocoa GUI to a MacRuby application</i>	
by Edward Marczak	14
<i>Developer to Developer</i>	
No Pane, No Gain, Part 2	
<i>Expanding our Preference Pane plug-in with Authorization Services</i>	
by Boisy G. Pitre	20
<i>MacEnterprise</i>	
Taming Automatic Updaters	
<i>Disabling application auto-updates for the enterprise environment</i>	
by Greg Neagle, MacEnterprise.org	26
<i>The EDA Showcase</i>	
Leveraging Windows Servers to Bring Sanity to Large-scale iOS Operations	
by Charles Edge	36
Binding with AppleScriptObjC	
<i>Connecting widgets through a key/value mechanism</i>	
by José R.C. Cruz	52
Examining 3 Important Nmap Scans with Wireshark	
<i>Using Wireshark to explain Nmap traffic</i>	
by Mihalis & Dimitris Tsoukalos	68
<i>The MacTech Spotlight</i>	
Kirill Luzanov, Binary Fruit	
.....	80

From the Editor

I've seen a number of references over the last few weeks where longtime Apple techs have been posting just how long they've been working with Apple tech. "OS X was the future when I started working with Mac OS." "Cocoa didn't exist when I became a Mac developer." "There was no iPhone when I started with Apple technology." Some people have really hung on through some exciting, but doubtful times. The doubt is largely out of the way, but the excitement is certainly still present. With Lion now just about out (and may be by the time this issue shows up in your mailbox), updates to iOS coming along and better developer tools, with Apple, the hits keep coming. You'll find out more about the excitement from WWDC 2011 in my wrap-up article in this month's issue.

It's also an exciting time to be part of the Apple community due to all of the activity in terms of ways to meet your peers in the community. From the Apple's Consultants Network to CocoaHeads and NSCoder to independent conferences, you can get involved. This includes MacTech's own MacTech Conference, taking place from November 2-4 this year in Los Angeles. We're still open to hearing from people looking to speak. If you're interested in either speaking or attending, visit <http://www.mactech.com/conference> for more information. We have some great speakers and topics lined up already and it looks like another great time is in store.

The excitement in the form of this month's issue comes in several forms. First, our cover story talks about ways to tame automatic updaters from taking over your system(s). Greg Neagle leads you through many of the popular products on the Mac that like to update themselves, oftentimes against a Sys Admin's wishes.

This month's Mac in the Shell column follows up from last month's column and walks through the details of the Ruby code that powers the logs application we started. In Developer to Developer, Boisy Pitre finishes off his instructional series on writing a Preference Pane (with source available!).

José Cruz leads us through more of the evolution of AppleScript with Binding with AppleScriptObjC. Mihalis Tsoukalos is back with some further instruction on using Wireshark. Wireshark is an amazing network utility of use to anyone that has a device that communicates over a network (yes, that's everyone).

Finally, this month's MacTech Spotlight focuses on Kirill Luzanov, founder of and developer for Binary Fruit. Just looking at Binary Fruit's first application, Disk Radar, gives me the feeling that we're going to see many interesting apps coming from the direction of Kirill Luzanov. For more on Kirill, check out the MacTech Spotlight.

Thanks again for being a MacTech subscriber. As always, we love to hear feedback from you on what you like, what you'd like to see and what may not be working so well for you. Send us letters at...letters@mactech.com. Hope to hear from you, and even better, see you at MacTech Conference..

Ed Marczak,
Executive Editor



Communicate With Us

Department E-Mails

Orders, Circulation, &
Customer Service

cust_service@mactech.com

Press Releases

press_releases@mactech.com

Ad Sales

adsales@mactech.com

Editorial

editorial@mactech.com
(Authors only, no pr)

Accounting

accounting@mactech.com

Marketing

marketing@mactech.com

General

info@mactech.com

Web Site

<http://www.mactech.com>

In this electronic age, the art of communication has become both easier and more complicated. Is it any surprise that we prefer **e-mail**?

If you have any questions, feel free to call us at 805/494-9797 or fax us at 805/494-9798.

If you would like a subscription or need customer service, feel free to contact MacTech Magazine Customer Service at 877-MACTECH

We love to hear from you! Please feel free to contact us with any suggestions or questions at any time.

Write to letters@mactech.com or editorial@mactech.com as appropriate.

MACTECH®

The Journal of Macintosh Technology

A publication of **XPLAIN** CORPORATION

The Magazine Staff

Publisher & Editor-in-Chief: Neil Ticktin

Executive Editor: Edward R. Marczak

Business Editor: Andrea Sniderman

Ad Director: Bart Allan

Production: David Allen

News: Dennis Sellers

Podcast Producer: Josh Long

drupalmaster: Erik Peterson

Xplain Corporation Senior Staff

Chief Executive Officer: Neil Ticktin

President: Andrea J. Sniderman

Accounting: Marcie Moriarty

Customer Relations: Susan Pomrantz

Columnists

Mac In The Shell: by Ed Marczak

Swaine Manor: by Michael Swaine

KoolTools/Geek Guides: by Dennis Sellers

MacEnterprise: by Philip Rinehart and Greg Neagle

Greg's Bite: by Greg Mills

Regular Contributors

José R.C. Cruz, Michael Göbel, Michele Hjörleifsson, Mihalis Tsoukalos

Oliver Pospisil, Rich Morin, William Smith

Canada Post: Publications Mail Agreement #41513541

Canada Returns to be sent to: Bleuchip International, P.O. Box 25542, London, ON N6C 6B2

MacTech Magazine (ISSN: 1067-8360 / USPS: 010-227) is published monthly by Xplain Corporation, 705 Lakefield Road, Suite I, Westlake Village, CA 91361. Voice: 805/494-9797, FAX: 805/494-9798. Domestic subscription rates are \$47.00 per year. Canadian subscriptions are \$59.00 per year. All other international subscriptions are \$97.00 per year. Please remit in U.S. funds only. Periodical postage is paid at Thousand Oaks, CA and at additional mailing office.

POSTMASTER: Send address changes to **MacTech Magazine**, P.O. Box 5200, Westlake Village, CA 91359-5200.

Opinions expressed are not necessarily the views of MacTech Magazine or Xplain Corporation. All contents are Copyright 1984-2011 by Xplain Corporation. All rights reserved. MacTech is a registered trademark of Xplain Corporation. MacNews, Xplain, Explain It, MacDev-1, THINK Reference, NetProfessional, NetProLive, Apple Expo, MacTech Central and the MacTutorMan are trademarks or service marks of Xplain Corporation. Sprocket is a registered trademark of eSprocket Corporation. Other trademarks and copyrights appearing in this printing or software remain the property of their respective holders.

WWDC Wrap Up 2011

by Edward Marczak

This year's Apple World Wide Developer Conference is just behind us as I write this. 2011 marked some significant firsts, and the event was exciting, stimulating and fun. The contents of the conference, aside from the keynote, are under non-disclosure, but there is still plenty to talk about. What took place this year?

The conference ran from June 5th through the 10th. There's probably no better place to start *than* the keynote, as it takes place on Monday, and is what kicks off the week. (Although, there are usually gatherings in the days prior, as you'll find a critical mass of people in town.) Steve Jobs took the stage to a standing ovation. Despite Jobs' apparent weak condition, the energy of the crowd is what really set the pace for the keynote. During the Keynote, 3 main topics were covered: Lion, iOS 5 and iCloud. As is typical for an Apple keynote, Steve Jobs covered the numbers: how much in sales, how many attendees and how fast the event sold out. (If you watch the keynote—which I encourage you to do at <http://www.apple.com/apple-events/wwdc-2011/>—you'll hear Steve mention that the event sold out in two hours. While this is a bit of revisionist history, the event still did sell out in about 8 hours—certainly less than 1 day). WWDC selling out of all 5,000+ tickets in under a day is a first. It certainly left some well-respected developers and long-time attendees in the lurch. If you weren't ready to pounce and provide credit card info the moment the conference was announced, you were mostly out of luck. This also led to a grey market of tickets being sold on eBay, Craig's List and the like. Jobs referred to this during the keynote and said, "this is the biggest place we can get!" Not a solution, but it's really the best way Apple can serve the community. If the event gets too large, people get lost in the shuffle, can't get into sessions, can't see an Apple Engineer and so on. That would make for a much worse event. With that said, people will be ready for next year, making it even more difficult to get a ticket. Additionally, unless some protection is put in place, there will be people that aim to buy tickets just to sell at a profit.

Lion

After Jobs' introduction, he handed the stage over to Phil Schiller, who introduced OS X Lion. (It was notable that there

were plenty of references to "OS X" without "Mac" prepended to it. As the author of an official Apple reference guide, I can tell you that they were very particular about this at one point.) Unlike the launch of Snow Leopard, which featured, 'no new user facing elements,' Lion is a tour-de-force on *both* the GUI and under-the-hood change. The GUI changes are refinements, inspired by iOS. More important is what Lion brings to developers. New APIs, improved APIs and updates to Objective-C. The most notable improvement is called Automatic Reference Counting, or "ARC". ARC takes the job of memory management away from the developer and lets the compiler handle it—certainly a first for a C-based language. (The technical specification for ARC was released as I was about to submit this article. If you're interested in the nitty-gritty, you can find it on the LLVM site here:

<http://clang.llvm.org/docs/AutomaticReferenceCounting.html>)

Wil Shipley of Delicious Monster shared with me, "[in particular] I'm excited by the announcement of Auto Retain Counting (ARC), which is a very low-level technology that is really only interesting to developers, but essentially allows us to code a lot faster while at the same time avoiding the most common kinds of errors we make. We've committed to only release code under ARC from now on, and have already ported our projects-in-progress to it." (That was fast, right?) ARC is compelling enough that this desire to move to it quickly is reflected in comments from many developers that I spoke

with. Interestingly ARC is not a Lion-only technology: developers can use ARC and target both Lion (10.7) and Snow Leopard (10.6), along with iOS 5 and 4. (Although, running under Snow Leopard and iOS 4 come with a caveat or two.)

This is exciting on a few levels. Not the least of which are the optimizations gained by managing memory via ARC, and changing to the Clang front end and the LLVM compiler. This allows for speed increases nearly everywhere. Apple may have the only computers in the industry that have been getting *faster* over time. The earliest Core2Duo machines, which ran 10.5 got a speed boost when they moved to 10.6, and will once again get

"We've committed to only release code under ARC from now on, and have already ported our projects-in-progress to it."

personals

like ships
passing in
the night

VEGETARIAN BOWLER. You bought me a warm beer and stole my heart. Used same kind of ball and spoke of hatred of rented shoes. Would love to chat over hummus. #5684.

LAWN CARE? My husband got lazy and hired you to mow our lawn. Instead you landscaped my erotic fantasies in ways I have never imagined. Could not pronounce your name but looked very sensual. I had blue shoes on. #3696.

TWINS WHO SAID TWINS. Us: two handsome guys in suspenders walking Maltese. You: two foxy ladies fighting over last piece of gum. What do you say the four of us make two good looking couples? Twin love. Call me. Call me. #4747.

DUGOUT FIRECRACKER. You were cleaning up a beer that you spilled on your white t-shirt and threw a whiskey bottle at the umpire. Must meet you and make children. #5551.

DAVID, YOU'RE GORGEOUS. Funny and brilliant. I don't deserve you but a girl can dream. #6885.

SY FROM DOWN SOUTH. You sat with us at Smitty's 11/24, missed you at The Boot. Wanna meet after work sometime? Call and gimme your number. Jenny. #6927.

CLASBY LATINA With substance. Spanish, too attractive, very private, salt water taffy, and a great sense of humor. #5551.

GP: YOU'RE SPOCK to my Captain Kirk. Love you in those vanity-sized jeans! Let's watch Oprah together. Call me. #6841.

GORGEOUS, WITTY, BORN TO TEASE: love theater, dance, golf, warm conversation. If you're tall, 35-55, non-smoker, financially secure, enjoys pampering a woman traveling, long walks and more. Please call. #6821.

ME: LONELY SWEDISH LINGERIE MODEL and gourmet cook. You: slightly overweight and without ambition. Must be into computers, role-playing games and air hockey. #5988.

49, PLAIN BUT WITH GOOD BITS. Overweight but curly, great mood, wicked sense of humor, and a weird view of life looking for like minded person. Age not important. #6994.

TREE HUGGER, MID 50'S, light smoker, tall. Like easy living, tropics and I'm friendly. Seeking considerate, semi-fit companion with a clue. Must love dogs and reggae. #6963.

ARE YOU HONEST? handsome, successful, financially secure, intelligent, world traveled, cultured, creative, lit, playful, adventurous, passionate, humorous, caring, loving, and between 45 and 60? Respond in email. #5551. #5551. #5551. #5551.

ARE YOU STIMULATED BY BEAUTY, INTELLIGENCE, HUMOR? Attractive SWF wants good looking SWM or SHM for romantic adventures, possible long term. Essentials: honesty, passion, kindness, sensuality, integrity, open mind. #6741.

ATTRACTIVE TALL (5'10"), SLENDER DPWF, 46, emotionally and physically fit, youthful appearance and outlook, intelligent, loving, desires long term relationship. #6853.

SWINGING SANTA. Lonely man who only works 6 weeks a year seeking woman with full time employment with benefits looking to grow old with man who shakes like a bowl full of jelly. #1258.

WM, 95, RECENTLY WIDOWED, seeking 18-20 hottie for "fun". Call me, I'm not getting any younger. I'll put you in my will. #6757.

BALD ROMEO. You serenaded the old people at the old people home last weekend. You were a terrible singer and quite unattractive, but your heart is obviously pure gold. My sister would be perfect for you. #7887.

MONKEY TRAINER. Seeking woman to train my monkey. Seriously, his name is Murphy and he is a 3 year old chimpanzee. He likes pop tarts and nice people. Plus, you and I will have sex. #7874.

SINGLE MAN. Single man seeking single woman for relationship. I enjoy dating and talking on the phone to women that I am dating. Would love a chance to date someone. #1254.

CUTE PIG SMARTY PANTS. Pig looks good in the shower. #5551.

SIDESHEW
sideshe
well i
for r
or ar

F
T
H
ing
light
do yo
good is
Call me

MANY WON
my life - but no
wonderful woman,
smart, professional, an
(non-smoker). Love of nature,
inherent humor. #6772.

RECENTLY PAROLED, looking for
a lady who will keep tab on the
straight and narrow. Must be into
drugs and gambling. #6767.

MORE LOS ROMANTICOS

We're Easier.

In fact, Real Studio is the easiest, fastest way to create software for Mac OS X, Windows, Linux and the web.

Why use Real Studio? Real Studio is the only object-oriented, cross-platform software development tool that enables users at all levels to create powerful, stand-alone, native applications. With over 40 native user interface controls including buttons, lists, fields and tab panels, extended database support, native reporting and Internet and networking features, Real Studio is cross-platform that really works.

Now, Real Studio Web Edition allows you to use this powerful development environment to easily build web applications — no need to know HTML, JavaScript, CSS, AJAX and PHP. And, unlike those usual web technologies, Real Studio compiles your web applications to binary, so they are safe and easy to sell.

Real Studio. Cross-platform development for humans.

real.studio

Real Studio. Cross-platform development for humans.

www.realssoftware.com/realstudio

a boost when moving to 10.7, particularly once the apps on the machine are compiled specifically for 10.7. Think about the contrast to Windows, here, where each new version of the OS almost demands that you purchase a new hardware component, if not an entire new machine. Of course, 10.7 will leave some older Mac models in the past: Lion will require a Core2Duo processor or better.

iOS 5

After discussing Lion, Phil Schiller handed keynote responsibilities to Scott Forstall, who spoke about iOS 5. While iOS 5 will benefit from the Objective-C language and compiler improvements mentioned with Lion, the next version of iOS also brings many visual and workflow improvements. One of the most notable is the improvement to the out of the box experience. No longer will you be greeted with a "Connect to iTunes" message upon unboxing. Rather, you'll see a "Welcome" screen, allowing you to use the device immediately. Steve Jobs said that if we truly expect to enter the "post-PC" era, we couldn't continue to have such a dependency on PCs. Another notable interface-lift is the Android-like notification system: notifications are collected in a notification area, exposed by sliding your finger from the top of the screen down. Each notification can be acknowledged individually, without dismissing other pending notifications.

Think about the contrast to Windows, here, where each new version of the OS almost demands that you purchase a new hardware component, if not an entire new machine."

We also will see the volume button turn into a shutter button in locked mode, allowing pictures to be taken quickly, before the moment has passed. Apple is also adding GPS-enabled notifications, allowing you to set a reminder when you enter or exit a particular area. How well that works vs. false positives and late triggers remains to be seen.

Despite all of the UI changes and improvements, people that I spoke with were still much more excited by the technology under the hood.

Patrick McCarron, an iOS developer told me, "I'm looking at making future updates to existing apps where I'll be able to actually *delete* old code due to Apple adding better ways to do things that we've had to do ourselves until now."

iCloud

Finally, Steve Jobs took the stage again and introduced iCloud, Apple's solution for syncing documents between all of your Mac OS X and iOS devices. In reality, iCloud is an umbrella-term for several technologies. In one sense, iCloud is a sync engine, performing some of the syncing that you're already used to with Mobile Me: contact and calendar syncing. In addition, you'll now be able to sync documents between devices.

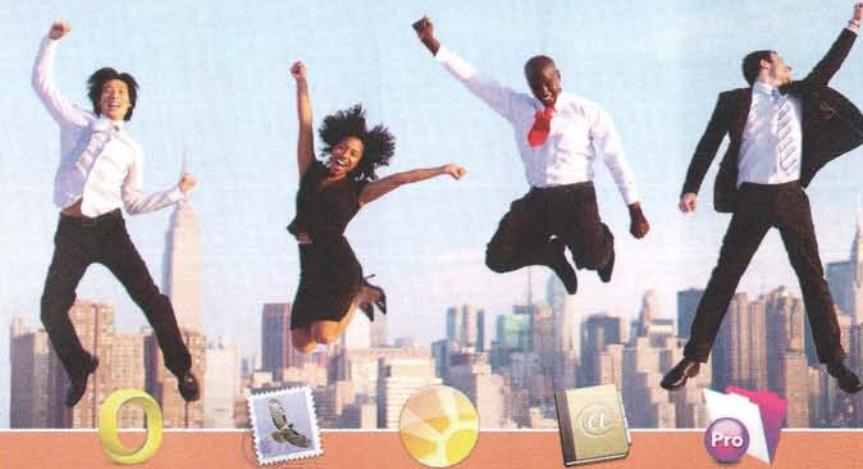
As many expected, iCloud was announced to also have a music component. Here, iCloud turns into a licensing engine:



Direct Mail

jumpstart your
small business

with powerful email marketing



Download for **FREE** Today at
www.directmailmac.com

Designed and built only for Mac

- Seamlessly integrates with the Mac applications you already use
- Create and send email campaigns with ease
- Real-time tracking to monitor effectiveness
- **No monthly fees**





affordable audio!

BUY DIRECT ONLINE
free shipping, no tax
audioengineusa.com

Experience our award-winning sound, high-quality materials, and truly useful features.



Audioengine 2 (A2)

Premium Powered Desktop Speakers

\$199 per pair

Closes the gap between computer speakers and home audio

"These are the best speakers for your desktop, computer, or media player."

— Connect Reviews

Audioengine W2

Premium Wireless Adapter for iPod

\$99

Audioengine W1

Premium Wireless Audio Adapter

\$99

High-quality wireless for your iPod, computer, subwoofer and all your audio gear

"Super-fast setup and the uncompressed sound is pretty remarkable."

— Uncrate



Model A5N shown in Solid Carbonized Bamboo \$449

starting at
\$349 per pair

Audioengine 5 (A5)

Premium Powered Bookshelf Speakers

Best-in-class active speakers for all your music

"There are no other speakers in this price range that come close."

— Mac Observer

P4 passive
speakers
starting at
\$249/pair



\$199

Audioengine N22

Premium Stereo Desktop Amplifier

Small yet powerful, with a high-quality headphone amp

"If you're looking for a desktop system that will give you great musical satisfaction with no hassle, you can't go wrong with the N22 and P4 passive speakers..."

— Positive Feedback

Works with all your gear • Cables included • 30-day audition • 3-year warranty

Visit our website for more product info, reviews, and awards: audioengineusa.com

©2011 Audioengine Ltd. iPod touch not included. iPod is a trademark of Apple Inc., registered in the U.S. and other countries. "Made for iPod" means that an electronic accessory has been designed to connect specifically to iPod and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards.



Apple already has all of this music on their servers—they certainly don't need you to upload it. Of course, Apple doesn't have *every bit* of music available. For any music that Apple doesn't have, there are two options. First, Apple is offering "iTunes Match." This service will scan your iTunes library and, for any music that Apple does have, it grants you a license and makes that music available from the cloud. Interestingly, you get Apple's copy of the music. So, if you have a version that you encoded long ago, iTunes Match will 'upgrade' you: the version of this song now available to you will come as a 256k AAC file. The second option is to just upload your copy of the song. For example, if you're a musician and have your own catalog—things Apple may not have—you can just upload it.

During the Keynote, Steve Jobs announced that every iCloud user would have 5GB of storage available for free. Apple is following the Amazon model here: Music purchased from Apple, or that from iTunes Match does *not* count against the 5GB of storage. (Why would it? Apple is already storing all of this music.) Mentioning that each user gets 5GB for *free* seems to imply that there will be some tiers of pricing that allows an increase to that storage. It wasn't mentioned at the Conference, nor was it made clear at the time of this writing what the pricing will be or, if this will be even be the case at all. One other looming question relates to photos: photos will sync to Apple's cloud, but only remain for 30 days. This is a first in an odd way: no other cloud provider has ever made it clear that your data is perishable. Steve Jobs said that, "30 days is enough time to sync to your devices." I'm not sure it is in all cases, and again, we'll see if there's some price-point that allows one to override that default.

iCloud is certainly something long awaited by developers and end-users alike. I'd say that Apple is actually catching up in this space just a bit. After attempts such as iTools, dot Mac and Mobile Me, it seems like they finally have their footing. Justin Williams of Second Gear said, "I have cautious optimism for the promise of iCloud, but Apple's past track record with web services like MobileMe and .Mac causes me to tether that optimism slightly. If it is indeed fast and reliable, I have no doubt that it will become an integral part of many of the first and third-party apps we use on a daily basis." During the Keynote, Steve Jobs said that, "if you think we're not serious about this, you're wrong." He went on to show a bit of Apple's newest data center, mention that it is capable, energy efficient and "green" in all possible ways.

Apple's vision here is a little different from everyone else in the industry at the moment. As I mentioned earlier, iCloud is actually composed of several parts, but overall is a sync engine for data, and a licensing service for music (and no mention was made for video in the cloud). This relies on native applications

running on each device (Unlike Amazon and Google's music services, Apple doesn't seem to allow streaming of your music—you'll need to download it to listen). Naturally, the devices in question are iOS devices and Macintosh computers. Apple also did not indicate that there would be a web view into your storage in the cloud (think Dropbox here). Also not mentioned, and still unanswered, are the fate of iDisk and iWeb. Will there be an iDisk-like solution offered? What will become of people's Mobile Me websites and photo galleries? Apple has roughly a year to figure it out, announce it and make the switch, as the cutover looks to be targeted at June 30th, 2012.

**"If [iCloud] is indeed fast and reliable,
I have no doubt that it will become
an integral part of many of the first and
third-party apps we use on a daily basis."**

**"It feels like Apple's plans are all
coming together... I think we'll see
an exciting couple of years."**

no longer an underdog, Apple's confidence was clear. No longer taking pot-shots at Windows or other platforms, Apple knows that the world at large has recognized their work.

Wil Shipley told me that, "[i]n terms of exciting new technologies, this was the best WWDC in ten years for me." I would wholeheartedly agree. The advancements in the Objective-C language and tools are really compelling, the updates to iOS are truly useful and iCloud is certain to spawn new breeds of applications on the platform. Apple may seem like a large company, but it does have finite resources. Release dates have been shifted back in time as Engineers needed to move from one platform to another. Now, however, with iOS concepts being brought to the Mac *and* Mac development conventions being brought to iOS, it really seems that Engineering

resources are working together. Indeed, Daniel Jalkut of Red Sweater Software said, "It feels like Apple's plans are all coming together. Sometimes their product and developer-tool designs seem to be a bit haphazard, but so many of them are starting to pay dividends that I think we'll see an exciting couple of years."

A unified team only allows Apple to perform better and more efficiently. That's good for all of us, and I'm excited to see what not only Lion brings us, but operating systems past that, too.



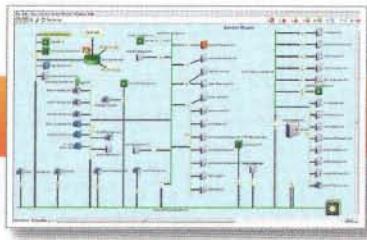
About The Author

Edward Marczak is the Executive Editor of MacTech Magazine and writes the monthly "Mac in the Shell" column. He co-founded the MacTech Conference and has authored several books about Macintosh technology. Most recently, this includes Enterprise Mac Managed Preferences, published by Apress.



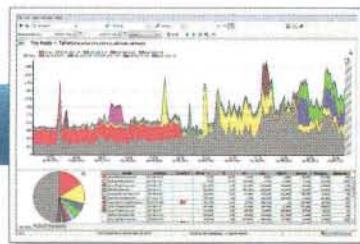
The #1 Network Monitoring, Mapping and Alerting Software for the Mac

Diagnostics



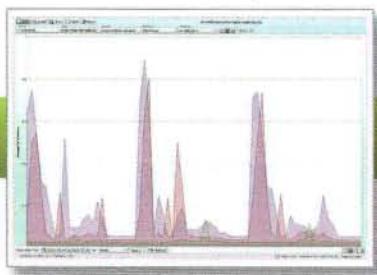
Layer 2 Connectivity

Troubleshooting



Flows Analysis

Capacity Planning



Reporting

- **Powerful**—Monitor anything connected to your network
- **Flexible**—Runs on Windows, Mac, Linux
- **Easy to use**—Simple configuration with auto-discovery
- **Affordable**—Fully integrated, no add-ons to buy

Download a Free 30-day Trial

www.intermapper.com

by Edward Marczak

Ruby and the GUI, Part 2

Adding a real Cocoa GUI to a MacRuby application

Introduction

Last month, we began creating a GUI-based MacRuby application: The Collector. This application goes off to collect log files, put them on a disk image and drop the .dmg file on the current User's desktop for ease of retrieval. We've only covered the creation of the GUI itself so far. This month, we'll finish up the code.

Restoring The Project

The full project is on the MacTech ftp site. You can certainly download it in order to follow along, however, I encourage you to type it in yourself. This gets you engaged in a way that simply downloading the code does not.

Last month, we left our `collectLogs` method with one line:

```
def collectLogs(sender)
  puts "Running the collectLogs method"
end
```

This certainly helped illustrate when the method got called, but it falls short of reaching our goal. This month, we'll fill that in. Load up your previous Xcode project, and click on the AppDelegate file in the project navigator. Add the code in Listing 1 to the `collectLogs` method, and then we'll step through it.

Listing 1: A working `collectLogs` method

```
def collectLogs(sender)
  # Collect logs
  logpaths = %W({ENV['HOME']}/Library/Logs)
  # Set up UI
  collect.setEnabled(false)

  status_label.stringValue = "Collecting..."
  status_label.hidden = false

  spinner.startAnimation(:spinner)
```

```
# Actually collect the logs
dir = Dir.mktmpdir
begin
  puts "Copying #{logpaths} to #{dir}"
  FileUtils.cp_r logpaths, dir

  puts "Sampling system.log"
  cmd = "syslog > #{dir}/system.log"
  %x[#{cmd}]

  # Put logs on disk image
  time = Time.now.to_i
  cmd = "hdiutil create -srcfolder #{dir}
#{ENV['HOME']}/Desktop/Logs-#{time}.dmg"
  puts "Running #{cmd}"
  %x[#{cmd}]
  status_end = "Complete"
rescue
  puts "Can't read log file."
  status_end = "Error - see logs"
ensure
  # remove the directory.
  FileUtils.remove_entry_secure dir
end

# Reset the UI
collect.setEnabled(true)

status_label.stringValue = status_end
spinner.stopAnimation(:spinner)
end
```

This is now pure Ruby that gets to interact with Cocoa and the objects created via Interface Builder. Let's step through it all a few lines at a time.

```
# Collect logs
logpaths = %W({ENV['HOME']}/Library/Logs)
```

Here, we simply define the directory path of logs—either an individual log file or a directory of logs—to collect. In this case, we're only specifying one entry: the logs in the current user's home. (There's a reason for this that we'll get to later on.)

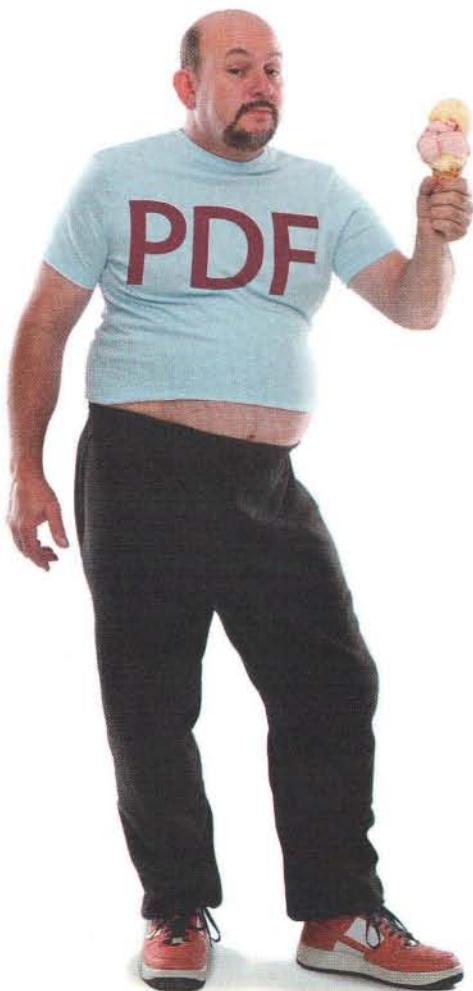
```
# Set up UI
collect.setEnabled(false)
```

Since this method is getting called when the user clicks the "Collect" button, we don't want repeated presses of that button to do anything, so we disable it. This Ruby method call, by the way, is equivalent to `[collectsetEnabled:NO]`; in Objective-C,

```
status_label.stringValue = "Collecting..."
status_label.hidden = false

spinner.startAnimation(:spinner)
```

These three lines are letting the user know what's going on. First, the status label gets its text set to "Collecting..." and becomes visible (its `hidden` attribute is set to `false`). Then, we start the spinner's animation. Next up is the heart of the action.



The affordable
PDF toolkit

Time to put your bloated PDFs on a diet?

You can have too much of a good thing. Images and scanned pages in PDFs, for example, make unnecessarily large files. Thanks to PDFpen, you can indulge in

visually-rich PDFs without the guilt and extra bytes. A few clicks will reduce resolution and color depth. Try PDFpen today and see just how easy it can be to slim down.

To see all the top 10 features of PDFpen, visit us at: www.smilesoftware.com/mactech



Copyright © 2011 SmileOnMyMac, LLC. SmileOnMyMac, DiscLabel, PDFpen, PageSender and TextExpander are trademarks of SmileOnMyMac, LLC.



Software that's just right

```
# Actually collect the logs
dir = Dir.mktmpdir
begin
```

We start out with a temp directory made with the `mktmpdir` method. This is important from a security perspective. If we chose a static, known path, like `/tmp/collector`, anyone could drop anything they want in that directory and have it included with our disk image.

After that, we open a begin block to have control over error trapping (with the `rescue` clause further on).

```
puts "Copying #{logpaths} to #{dir}"
 FileUtils.cp_r logpaths, dir

puts "Sampling system.log"
```

The two puts commands are just easy ways of getting information into the system log. This is useful for timing and diagnostic purposes. The important line here is the `cp_r` method in the `FileUtils` library. `cp_r` recursively copies a directory, or, copies a single file, depending on the source.

```
cmd = "syslog > #{dir}/system.log"
%x[#{cmd}]
```

This is a little bit of a trick. Rather than copy the system log itself—which we can't, as we're not authorized—we use the `syslog`

command to dump a portion of the log into our temporary directory. If you don't recall, `%x` is Ruby's way of running a shell command. (If you haven't seen the `syslog` command, use it once, and then look at the man page.)

```
# Put logs on disk image
time = Time.now.to_i
cmd = "hdiutil create -srcfolder #{dir}
#{ENV['HOME']}/Desktop/Logs-#{$time}.dmg"
puts "Running #{cmd}"
%x[#{cmd}]
status_end = "Complete"
```

Again, we use `%x` to shell out and run a command. In this case, `hdiutil` to create a disk image from our temporary directory. We use `ENV['HOME']` to find the current user's home directory and Desktop. This is where we drop the final disk image. Notice that we set a variable for what we want the status message to be—it reflects success of the whole block.

```
rescue
  puts "Can't read log file."
  status_end = "Error - see logs"
```

This rescue block fires off if something goes wrong. Again, we set the `status_end` variable appropriately.

```
ensure
  # remove the directory.
```

Ship Smarter. Ship Faster.

ReadyShipper is the premier multi-carrier
shipping software for the Mac.

ReadyShipper imports orders, creates shipping labels and packing lists and works with today's popular ecommerce systems. Get started today with a full-featured free trial that will have you shipping in minutes.

Free ecommerce plug-ins supporting these companies and many more.



amazon.com

PayPal



network solutions

shopsite

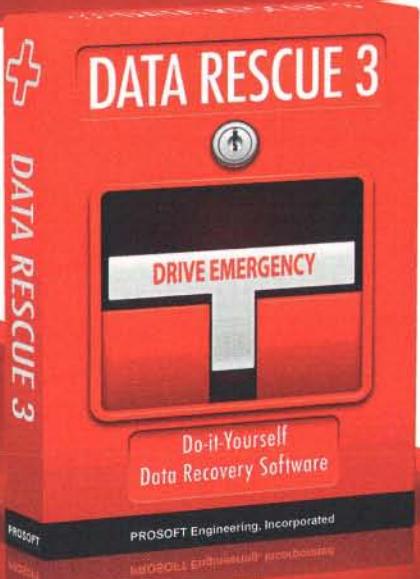


Available only from

ReadyShipper is USPS ready featuring Stamps.com and Express1 Discount Postage with your choice of FedEx or UPS shipping.

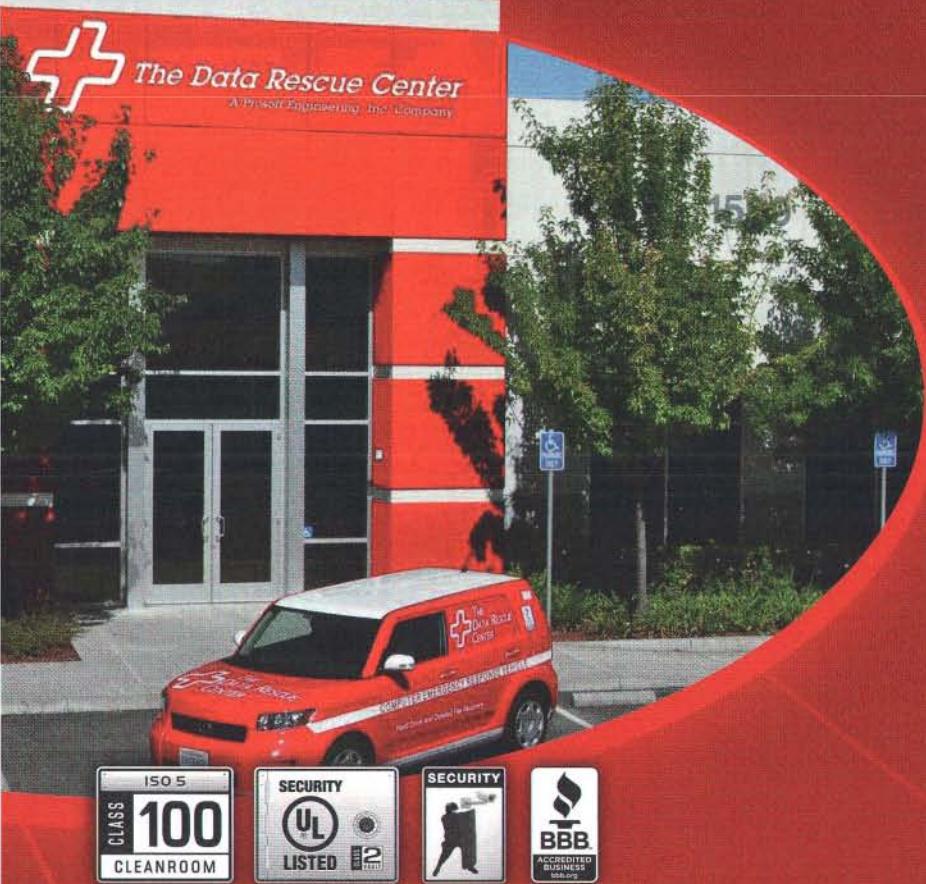
Download your free trial by visiting: www.trueship.com.

Questions? Call Us: 877-818-SHIP (7447)



...comes the
complete data recovery service.

From the **makers** of...
Data Rescue 3*
The **best selling** data recovery software for Mac...



The Data Rescue Center was founded by Prosoft Engineering, makers of the award-winning Data Rescue software. Our recovery know-how provides unparalleled advantages over other recovery services.

- FREE hardware diagnosis
- FREE specialized drive & laptop boxes sent direct to you at NO COST
- No Data, No Charge
- Professional Results at a Lower Cost
- Numerous awards in 2010 for Best Computer Recovery Service
- Class 100/ISO 5 Cleanroom
- Class 2 Vault
- FREE E-Waste Recycling

The Data Rescue Center is headquartered in Livermore, California at a new state-of-the-art facility near Lawrence Livermore National Laboratory.

This new facility provides our recovery engineers with the top technology to recover your computer data while offering best-in-class security features to protect your data from being compromised.



The Data Rescue Center
hard drive recovery data migration photo archiving

1599 Greenville Rd Livermore CA 94550

877-501-4949

TheDataRescueCenter.com

```
 FileUtils.remove_entry_secure dir  
end
```

No matter which path we take—the intended path, or the rescue path—the ensure block runs. We always want to get rid of the temporary directory we created.

```
# Reset the UI  
collect.setEnabled(true)  
  
status_label.stringValue = status_end  
  
spinner.stopAnimation(:spinner)  
end
```

Finally, we perform actions that reset the GUI: re-enable the 'Collect' button, set the `status_label` to the success or failure message as appropriate (contained in the `status_end` variable) and we stop the spinner. The method then formally ends.

After all of that has run, the app is ready to listen for its next action: collect logs again, or quit.

Conclusion

Once again, we covered a good amount of ground this month. Hopefully, this makes using MacRuby to create Mac OS X applications a bit clearer to you. I'll be creating more in upcoming

columns, too—practical projects that have been inspired by questions from people with real issues to solve, but not quite knowing how to solve them. Let's solve these issues together.

Media of the month: *Inception*. I'll admit to being a bit obsessed with this movie, so, I'm recommending the movie, the soundtrack, the bonus features...the lot. If you haven't seen it, get to it! If you saw it in the theatre, it's worth another look. It's available on DVD, Blu-Ray, in iTunes and via Netflix, so, it's really *available*—in nearly any form you wish.

I hope you've gotten your ticket to MacTech Conference 2011, as everything is in order for another great event. Better yet, be a speaker! We're still accepting submissions for speakers at <http://www.mactech.com/conference/speakers-app>. Visit <http://www.mactech.com/conference> for more information about the conference in general and to purchase tickets. Hope to see you in Los Angeles!



About The Author



Edward Marczak is the Executive Editor of MacTech Magazine and writes the monthly "Mac in the Shell" column. He co-founded the MacTech Conference and has authored several books about Macintosh technology. Most recently, this includes *Enterprise Mac Managed Preferences*, published by Apress.

CONVERT DVI TO MINIDISPLAYPORT

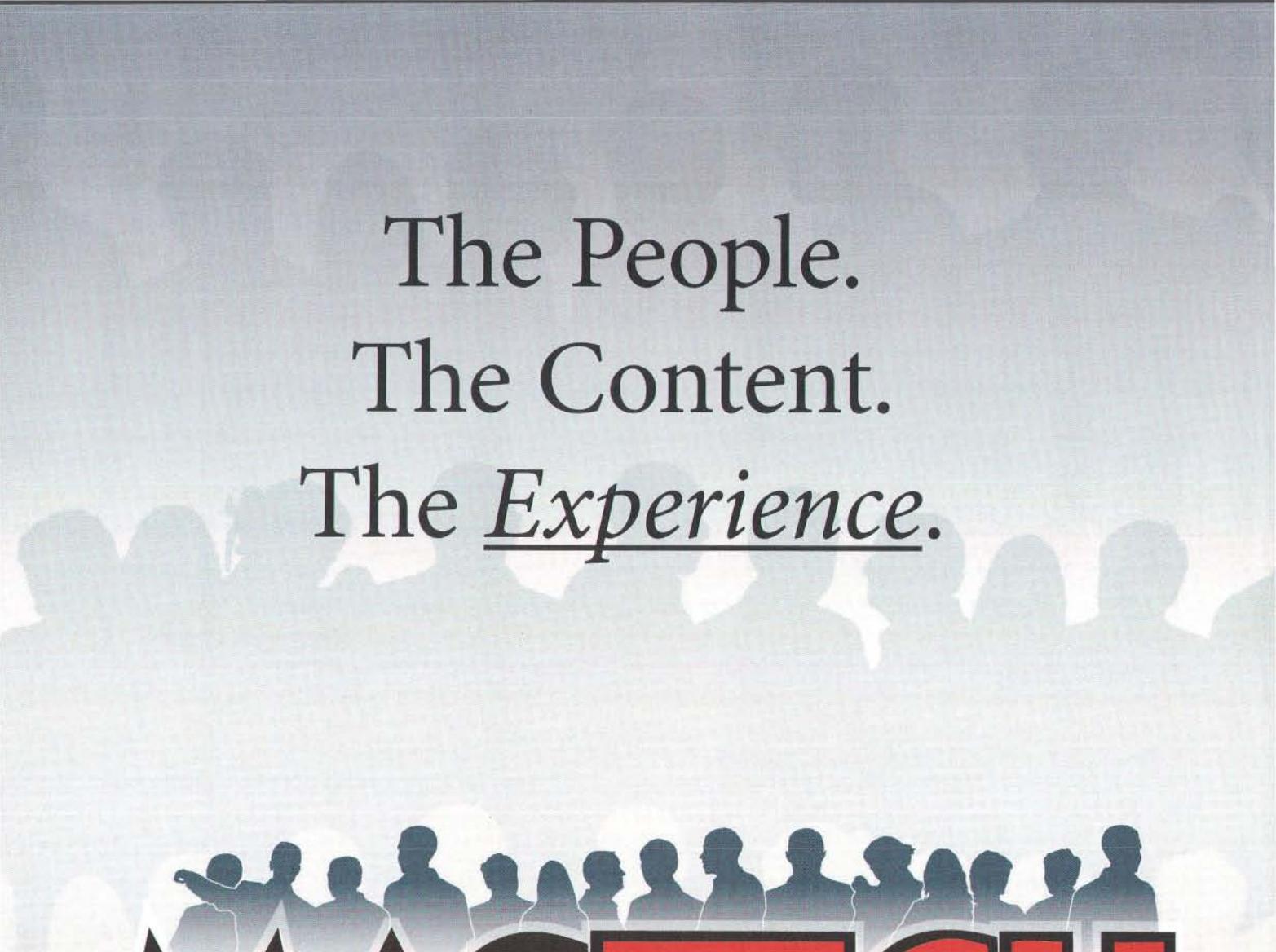
Gefen introduces a new solution for enabling computers with DVI connectors to utilize new Apple displays using the MiniDisplayPort connection. The converter is a low cost solution available that makes the legacy computers useful for the foreseeable future.

The advertisement features a white Gefen DVI to Mini DP Converter unit. The unit has a circular logo with the word "Gefen" and "DVI to Mini DP Converter". A white DVI cable is connected to the left side of the converter, and a white Mini DisplayPort cable is connected to the right side. The background is dark, making the white converter stand out.

Gefen
DVI to Mini DP Converter

www.gefen.com
Stretch It. Switch It. Split It. Gefen's Got It.®

The People.
The Content.
The *Experience*.



MACTECH
CONFERENCE 2011

November 2-4, 2011
Sheraton Universal • Los Angeles, CA

<http://www.mactech.com/conference/>

DEVELOPER TO DEVELOPER

by Boisy G. Pitre

No Pane, No Gain Part 2

Expanding our Preference Pane plug-in with Authorization Services

Introduction

Hello and welcome back to *Developer to Developer* column. If you followed last month's article, you'll recall that we delved into the creation of a preference pane plug-in for the System Preferences application on OS X. We went so far as to build the actual preference pane plug-in itself, and then launched it in System Preferences. This month, we're going to add security to our plug-in, as well as take a trip through the debugger to see exactly how a preference pane plug-in is debugged.

Expanding Our Preference Pane

Recall that last month we had a single button on our preference pane plug-in. When this button was clicked, it launched a browser to the website of our favorite magazine. It was a simple, but effective way to demonstrate control behavior in a preference pane. We'll expand the pane a bit this month to include a checkbox which will, when checked, direct us to the login page of the MacTech website. Of course, the Xcode project for this new and expanded version of the preference pane is downloadable from the MacTech website, so go ahead and grab it.

Open the Xcode project and double click on the D2DPref.xib file that will load up Interface Builder. Note the presence of the aforementioned checkbox above our now familiar MacTech button.

The state of the button is actually saved in our preference pane's preferences file, and uses Cocoa bindings to maintain the value. Note in Figure 1 that our button's value is bound to the goToLoginPage key, which itself is part of the shared user defaults system. As the box is checked and unchecked,

the value is modified within the context of the preference pane's preferences file.

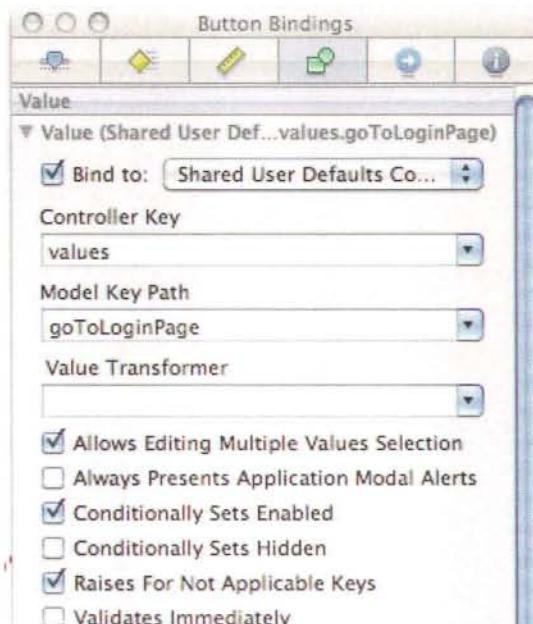


Figure 1.The Button Binding in the Interface Builder Inspector

Security and Authorization

Since preference pane plug-ins are system-wide configuration interfaces, it is often necessary for them to touch or modify files that are outside of the normal user's purview. Apple provides several frameworks, including Security.framework and SecurityInterface.framework, which allow components like preference pane plug-ins the access they need for such privileged operations. In our simple, contrived example, we aren't in need of authorization services, but we'll utilize it to some degree in our plug-in because of its obvious benefits (and likely usage in your applications).

For now, go back to Xcode and build the preference pane plug-in, then double click the D2D.prefPane file under the Products folder on the Xcode sidebar. This action should trigger System Preferences to start up, copy the preference pane plug-in then invoke it. You should see a window with the buttons and a padlock. Notice how the buttons are currently disabled and non-selectable. Click on the padlock and type in your password (note that you will need to provide credentials from an administrator account in order for this to work). Upon authorization, the padlock changes to the unlocked position and you can interact with the buttons. Clicking on the unlocked padlock will re-lock everything, and the buttons will once again return to an unenabled state.

Your business at your fingertips.

With Daylite for iPad you'll have access to your critical business data no matter where you are, letting you make important business decisions even when you and your employees are on different sides of the world.



Visit www.marketcircle.com/daylite for a free 30-day trial.



Apple
Design
Award



Macworld
BEST
OF SHOW
2009



MacUser



Macworld



Macworld



Macworld

MACTECH® domains

Register

**Get your .COM
or any other
domain name
here!**

FREE with every domain:

- **FREE! Starter Web Page**
- **FREE! Getting Started Guide**
- **FREE! Complete Email**
- **FREE! Change of Registration**
- **FREE! Parked Page w/ Domain**
- **FREE! Domain Name Locking**
- **FREE! Status Alert**
- **FREE! Total DNS Control**

Just visit
www.mactechdomains.com
to register for your domain today!

Starting
at
\$1.99

when a non-domain name product
is purchased. Limitations apply.



Figure 2.The Plug-in in the Locked State

Now that we've demonstrated how authorization works, let's take a closer look at the implementation details.

With D2DPref.xib still loaded in Interface Builder, take a look at the preference pane window and notice view in the lower area titled "SFAuthorizationView." This view contains our padlock and text, and is connected to the D2DPref (represented by the File's Owner object) via the authView outlet. The D2DPref class will use this outlet in order to obtain information about the state of the authorization.

Click on each of the buttons and examine the bindings in the Inspector pane. As indicated above, the value of the checkbox button is tied to the goToLoginPage key, which is part of the user defaults. Furthermore, the Enabled property of the button is tied to a variable called unlock which is part of the D2DPref class (again, represented by File's Owner). This variable will be the key to providing users access upon successful authorization.

Moving back to Xcode, let's take a look at the code and how it ties into our XIB file.

In our D2DPref.m file, we've expanded our mainViewDidLoad method from last month quite a bit. Using the Authorization framework, we setup our rights, which will allow us to interact with the authorization view and unlock. We then set our self as the delegate to the authorization view.

Accessor methods exist to allow us to obtain and set the Boolean value unlocked. Finally, two SFAuthorization delegate methods exist which are called when we are authorized and deauthorized, setting and unsetting the unlock variable respectively. Recall that our buttons' enabled statuses are tied to this very Boolean via bindings, so the act of modifying the unlocked variable causes the buttons to be enabled and disabled automatically.

Debugging the Preference Pane Plug-in

Debugging a preference pane plug-in is not as straightforward as debugging an application. This is precisely because the plug-in itself cannot run; it needs a container application to load it and activate it. That container, of course, is the System Preferences application.

In order to debug the plug-in, we need to add a custom executable in Xcode and make that our target. To do this, locate the Executables tab in the Xcode pane, right click it then select **Add > New Custom Executable...**

A window will appear where you can type the Executable Name and an Executable Path. Click the Choose... button and navigate to /Applications/System Preferences, making that your executable.

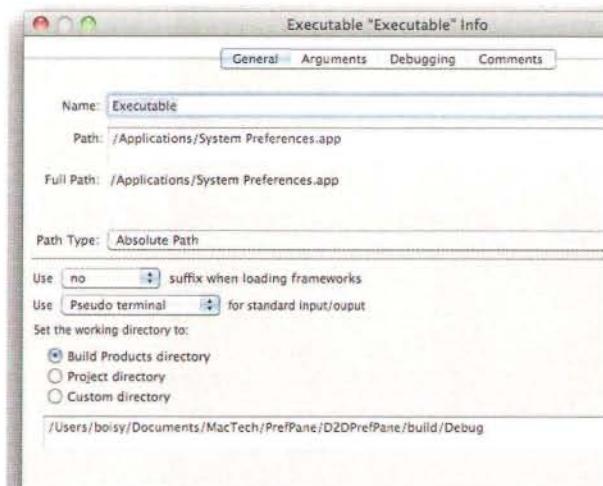


Figure 3.The Custom Executable Configuration Window

Now, we need to ensure that the preference pane plug-in we want to debug is located in either the /System/Library/PreferencePanes folder or the Library/PreferencePanes folder in our home directory. Recall that when we double click our D2D.prefPane product from Xcode, System Preferences launches and performs the copy at that time. This is the quickest way to ensure that our preference pane plug-in is in the right spot for debugging. Go ahead and do that now.

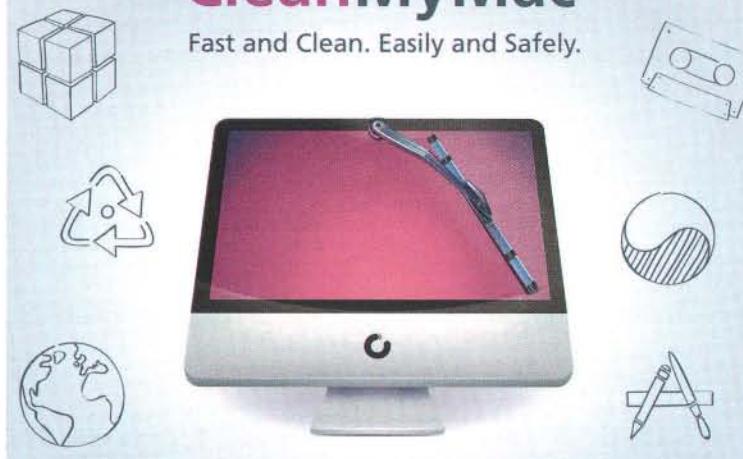
Once System Preferences has launched, quit it immediately since it has performed its job and copied our plug-in to the correct place. Now, from within Xcode, ensure that our custom executable is indeed the active executable. Set your breakpoint on the first executable line in the mainViewDidLoad method, then perform a Build and Debug from the Xcode Build menu. This action will launch System Preferences. You will have to then click on the D2D icon to invoke your plug-in, but as soon as you do, the breakpoint will trigger and you will find yourself in Xcode. From there, you can perform full analysis on variables, step through the code, and watch the preference pane plug-in in action.

Things To Watch For

A big mistake that people make when debugging a preference pane plug-in is that they make a change to the plug-in, re-build, then immediately invoke the debugger.

CleanMyMac

Fast and Clean. Easily and Safely.



CleanMyMac is the premier tool for keeping Macs clean and increasing system performance.

Get 20% discount! Coupon Code: MTECHJ

macpaw.com/mactech



For affiliate inquiries contact: affiliates@macpaw.com

*Limited time offer. Valid thru July 15th, 2011

TECHTOOL PRO 6

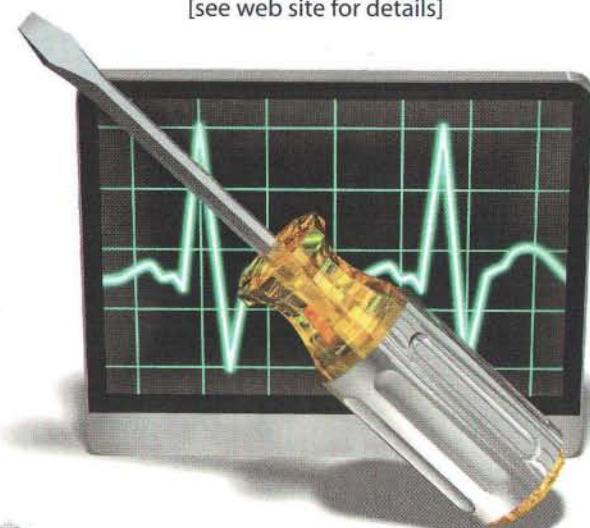
Total Diagnostics, Maintenance and Drive Repair

AppleCare users - you qualify to upgrade your

TechTool Deluxe to TechTool Pro 6

today for only \$39.99!

[see web site for details]



Remember, before debugging the plug-in, it must be copied into either one of the two directories where preference pane plug-ins reside. Without performing this step, you are essentially debugging the previous version of the plug-in, not the one just compiled. That is why we went through the extra step of double clicking the preference pane plug-in from within Xcode's Product folder to ensure that our most recently compiled version was copied over.

Also, ensure that your plug-in is not running when invoking the debugger. You can either quit System Preferences entirely, as it will simply be relaunched when you invoke the debugger.

Summary

From controls to security to a ready-to-go Xcode project, you now have all of the tools to build your very own System Preferences plug-in. We touched on the authorization framework and how we can configure our controls to respond to the unlocking and locking of the authorization view for security purposes. Finally, we took a quick run through the debugger and mentioned some issues that can come into play when we debug a plug-in. Hopefully this simple project can be a starting point for your own preference pane plug-ins in the future. There's also a lot more that we didn't cover with Authorization Services, so check out the bibliography for additional references.

Bibliography and References

Apple, *Preference Pane Programming Guide*, <http://developer.apple.com/library/mac/documentation/UserExperience/Conceptual/PreferencePanes/PreferencePanes.pdf>

Apple, *Authorization Services Programming Guide*, http://developer.apple.com/library/mac/documentation/Security/Conceptual/authorization_concepts/authorizationconcepts.pdf



About The Author



Boisy G. Pitre lives in Southwest Louisiana and is the lead developer at Tee-Boy where he also consults on Mac and iOS projects with a variety of clients. He holds a Master of Science in Computer Science from the University of Louisiana at Lafayette. Besides Mac programming, his hobbies and interests include retro-computing, ham radio, vending machine and arcade game restoration, and playing Cajun music. You can reach him at boisy@tee-boy.com.

SmartStrip

The Control Outlet affects all the Automatically Switched Outlets.

- Saves an average of \$52.91 a year in energy costs.
- Recommended as one of the top 5 ways to save energy!
- Pays for itself in as little as 6 months.



Charging Station

When the batteries in your mobile devices are fully charged, it automatically unplugs them.

- Saves up to \$34.33 a year in energy costs.
- Stop killing your batteries by overcharging them!
- More than doubles the lifespan of your mobile devices.



Going GREEN

BITS LIMITED

made easy!

**BITS
LIMITED**

For more information you can contact us at:

813-425-5744
sales@bitsltd.net
www.bitsltd.net

True Surge

Truly protects your equipment from power surges!



- The only daisy chainable surge protector on the market.
- Totally disconnects your equipment in the event of a power surge.
- Safest surge protector available!

powersquid®

No more wasted outlets. Great for the workshop.



- Very durable and versatile.
- No more damaged plugs on your equipment.
- Flexible arms make it easy to plug & unplug standard or transformer plugs.
- Recessed lighted power switch eliminates accidental shutoff.



Docking Stations for Apple Computers



DOCKING STATIONS FOR APPLE COMPUTERS

Turns your laptop into a desktop



- Includes USB hub to give you a total of 4 USB 2.0 ports
- Allows access to SD slot
- Adds an Ethernet Connection to your MacBook Air for wired networks
- Allows you to use an external monitor in addition to your laptop
- Angles your MacBook Air off a flat surface

Visit our website for latest product announcement www.BookEndzdocks.com



BookEndz®

Manufactured by Olympic Controls
1250 Crispin Drive • Elgin, Illinois 60123 • USA

Phone: 847-742-3566 • Fax: 847-742-5686 • Toll Free: 888-622-1199 • E-mail: Sales@BookEndzdocks.com

Taming Automatic Updaters

Disabling application auto-updates for the enterprise environment

by Greg Neagle, MacEnterprise.org



MacEnterprise.org

Mac OS X enterprise deployment project

Introduction

Last month's column was aimed at application developers and discussed ways developers could make their software more "enterprise-friendly." One topic covered was that of auto-updaters. Here's a recap of that topic:

Many vendors have their applications check for their own updates. This is a great strategy for individual purchasers like home users, where the purchaser is the primary user and essentially the administrator for his or her own machine. But in an enterprise environment, applications that check for updates can be an annoyance. Bandwidth is wasted when one thousand copies of an application, all installed in a single company, go out to the Internet and retrieve one thousand copies of an update. Worse, once they've downloaded an update, these applications might alert the user of the software and ask for administrative credentials that the user doesn't have. For these reasons, system administrators often want to turn off auto-update mechanisms for software they manage, especially if they have other methods of updating software for their organization.

This month's column is once again aimed at systems administrators in large organizations. Auto-update mechanisms are becoming increasingly common, so managing the behavior of application auto-updaters is a growing problem for enterprise administrators.

Microsoft Office

Most enterprise deployments have to deal with Microsoft Office. Fortunately for the busy admin, Microsoft Office 2008 and 2011 use the same auto-update mechanism. This mechanism is shared by some other Microsoft products, like Remote Desktop Connection 2. The updater is located at

/Library/Application Support/Microsoft/MAU2.0/Microsoft AutoUpdate.app. It uses standard

Apple plist-style preferences, so it's easy to manage with MCX, Apple's preference management framework. If you are using MCX, you can use Workgroup Manager to import a com.microsoft.autoupdate2.plist file. Edit out every preference key except HowToCheck, which should be set to Manual. It should look something like Figure 1.

Name	Type	Value
Once	dictionary	empty
Often	dictionary	1 item
HowToCheck	string	Manual
Always	dictionary	empty

Figure 1 – Disabling Microsoft Autoupdate via MCX

Note that we're managing the HowToCheck preference "Often." Always doesn't work with this application, so "Often" is the next best thing, and is sufficient in practice. If you'd like to turn off Microsoft AutoUpdate by default, but allow your users to turn it back on if they desire, manage this preference "Once."

What can you do if you aren't using MCX? Well, this might be a good reason to start using MCX! And you don't need a

The Ultimate DVR for HD cable and satellite TV



eye^{tv}

watch record edit enjoy

Award-winning EyeTV turns your Mac into the coolest television in the house. Work or surf the Web and watch TV at the same time. Record your shows to enjoy later, and play them on your iPhone® or iPad®.



eye^{tv} HD

High Definition Video Recorder
for Component Video

SRP \$199.95

Elgato products are available at these and many other authorized Apple dealers:

Apple Store

amazon.com

MacMall

OWC
owcomputing.com

elgato

STOP SHARING!



START FAXING!

Each subscriber receives faxes directly by email as PDF file attachments.

Corporate accounts from 3 to 100+ users available

For more information and a special offer for MacTech readers, visit

www.MaxEmail.com/MacTech



Call: 800-964-2793

Mac OS X Server to implement MCX, either. See my prior columns on LocalMCX in the MacTech archives, or better yet, buy a copy of the Apress book *Enterprise Mac Managed Preferences* by Edward Marczak and yours truly for a guide to implementing MCX or LocalMCX.

But if you really can't or don't want to use MCX, you could probably get by with a script that runs at login (perhaps by using a launchd LaunchAgent) and does this:

```
#!/bin/sh  
/usr/bin/defaults write com.microsoft.autoupdate2  
HowToCheck Manual
```

The script has two lines – the “she-bang” line that lets the OS know that this is a shell script, and the defaults command, so watch the line wraps. You'd save this script somewhere like `/Library/MyOrg/Scripts` and create a LaunchAgent plist that looked something like this:

```
<?xml version="1.0" encoding="UTF-8"?>  
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"  
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">  
<plist version="1.0">  
<dict>  
    <key>Label</key>  
    <string>com.mactech.disableMAU</string>  
    <key>LimitLoadToSessionType</key>  
    <array>  
        <string>Aqua</string>  
    </array>  
    <key>ProgramArguments</key>  
    <array>  
        <string>/Library/MyOrg/Scripts/DisableMAU</string>  
    </array>  
    <key>RunAtLoad</key>  
    <true/>  
    <key>KeepAlive</key>  
    <false/>  
</dict>  
</plist>
```

You would save this plist as `/Library/LaunchAgents/com.mactech.disableMAU.plist`. Owner and group must be root and wheel, respectively, and the mode must be 644. If you do everything correctly, on each user login, the script will run and set the appropriate value in Microsoft AutoUpdate's preferences.

Other applications using Defaults/MCX

Sparkle (<http://sparkle.andymatuschak.org/>) is a popular framework used in many applications to enable auto-updates. Applications that use the Sparkle framework all use the same preference keys to control update behavior. To disable auto-update checking for an application that uses the Sparkle framework, set `SUEnableAutomaticChecks` to false. Figure 2 shows an example in Workgroup Manager.

Presto! PageManager⁹

The Ultimate Document Solution



Figure 2 – Disabling auto-update for VLC

The **defaults** version of this would be:

```
defaults write org.videolan.vlc SUEnableAutomaticChecks -bool FALSE
```

Some other applications that use the Sparkle framework include:

Adium
BusyCal
Colloquy
CyberDuck
Hulu Desktop
MarsEdit
NetNewsWire
Perian
Plex
SubEthaEdit
Suitcase Fusion
TextMate
Toast

Still more

There many are other applications whose auto-update behavior can be controlled in a similar manner. As long as they have a preference to disable auto-updates that is stored in a plist in **~/Library/Preferences**, you should be able to manage it via MCX or **defaults**. A useful strategy is to turn off auto-updates in the application's preferences, then examine the applications' preferences plist to determine which key and value is needed.

Here are a few examples. I give the “**defaults**” version, but you should be able to easily translate these into MCX as well.

iTunes

```
defaults write disableCheckForUpdates -bool TRUE
```

iWork

```
defaults -currentHost write com.apple.iWork SFLDefaultsAutoUpdateCheck -bool FALSE
```

- Stack files with various formats for easy page handling
- Wide-range of PDF conversion and features including searchable PDF
- The embedded scan module (TWAIN) supports a variety of scan option
- Document pallet for easy organization
- Document inbox for monitoring incoming files
- Filter the types of documents for quick view



Presto! BizCard

Available on the iPhone App Store



* Supports iPhone 3GS, iPhone 4

- Capture business cards and convert to contacts
- NewSoft SFIT (Smart Field Identification Technology) distinguishes data fields of first name, last name, address, etc
- Simple and intuitive user interface
- Supports both portrait and landscape business cards
- Detects the orientation and automatically rotates the card image
- Captures multiple cards and performs batch recognition

(`-currentHost` corresponds to "ByHost" managed preferences)

iMovie 8

```
defaults write com.apple.iMovie8 AutoUpgradeCheck -bool  
FALSE
```

(I don't have access to iMovie 9, but it should be similar...)

iDVD and iPhoto

```
defaults write com.apple.iDVD CheckForUpdates -bool FALSE  
defaults write com.apple.iPhoto CheckForUpdates -bool FALSE
```

iWeb

```
defaults write com.apple.iWeb SFLDefaultsAutoUpdateCheck -  
bool FALSE
```

GarageBand

```
defaults write com.apple.garageband  
DfPrefs_NextUpgradeCheck -date 'Dec 31, 2100 12:00:00 PM'
```

This just sets the date of the next check into the far future, since GarageBand doesn't seem to have an explicit on/off switch for update checks. The inconsistency between the various iLife apps is surprising.

Flip4Mac WMV

This is a QuickTime plugin that allows QuickTime to play Windows Media files.

```
defaults write net.telestream.wmv UpdateCheck_CheckInterval  
-int 9999
```

OmniGroup applications

```
defaults write com.omnigroup.OmniFocus  
AutomaticSoftwareUpdateCheckEnabled -bool FALSE  
defaults read com.omnigroup.OmniPlan  
AutomaticSoftwareUpdateCheckEnabled -bool FALSE  
defaults read com.omnigroup.OmniOutlinerPro3  
AutomaticSoftwareUpdateCheckEnabled -bool FALSE
```

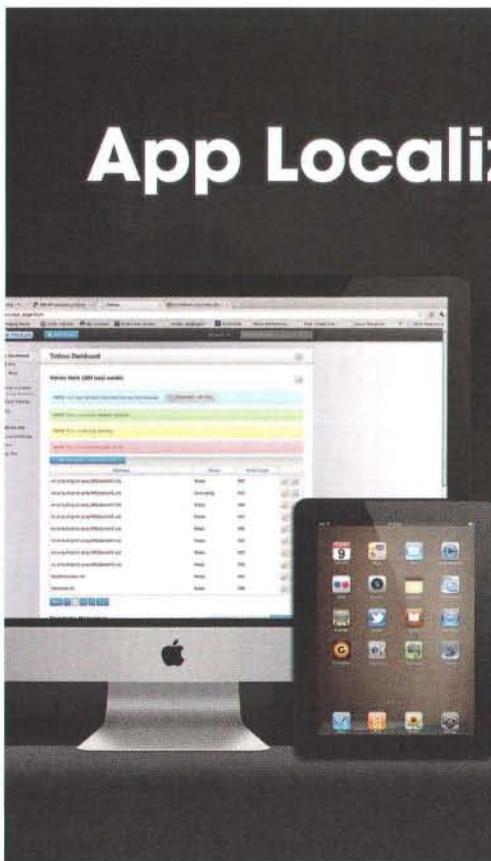
(I imagine this same key works for all of the OmniGroup applications, though I haven't personally tested them all.)

TextWrangler and BBEdit

```
defaults write com.barebones.textwrangler  
SUSoftwareUpdateEnabled -bool FALSE  
defaults write com.barebones.bbedit SUSoftwareUpdateEnabled  
-bool FALSE
```

Google applications

This includes Chrome, Google Earth and Google SketchUp.



App Localization as a Service

Upload your en.lproj We localize everything You increase global sales

Check us out at tethras.com and
receive **\$100 off localization**
when using code #mactech

TETHRAS

Back up everyone, everywhere.



CRASHPLAN™

Continuous Backup for Everyone

The easy, automatic way to protect all your data.

Individuals, businesses and enterprises around the world count on CrashPlan+, CrashPlan PRO and CrashPlan PROe to keep their data safe.

You can too! **Try it for free for 30 days.**

Peace of mind is just a few clicks away at crashplan.com



```
defaults write com.google.Keystone.Agent checkInterval 0
```

See

<http://www.google.com/support/installer/bin/answer.py?answer=147176> for additional detail.

Other Third-Party Applications

There are several popular third-party applications whose updaters cannot be managed via defaults or MCX since they do not store their preferences using Apple's preference plists. These require additional effort to disable.

Adobe CS5 applications

If you use the Adobe Application Manager, Enterprise Edition (AAMEE) to create Adobe CS5 enterprise installation packages for your organization, you can disable the Adobe Updater by clicking a checkbox in AAMEE. But if you didn't do that, or are installing Adobe CS5 apps with some other method, it's still possible to disable the Adobe Updater by creating a special file at `/Library/Application Support/Adobe/AAMUpdaterInventory/1.0/AdobeUpdaterAdminPrefs.dat`. Details are available at http://kb2.adobe.com/cps/850/cpsid_85016.html.

Adobe CS3 and CS4 applications

The Adobe Creative Suite 4 Deployment Toolkit can create CS4 installation "packages" that suppress update

checks. Adobe also documents how to disable updates when doing an enterprise deployment of CS3 products here: http://www.adobe.com/support/deployment/cs3_deployment.pdf. If you didn't suppress updates when building your installer package, or you've installed CS3/CS4 applications by other means, you can still disable the updater.

The updater for Adobe CS3 and CS4 products can be disabled using a preferences plist. You could probably manage this via MCX or defaults, but by creating a single file, you can turn off the Adobe Updater for all users of a machine. This file could be pushed out with your software deployment utility of choice.

```
defaults write  
/Library/Preferences/com.adobe.AdobeUpdater.Admin  
Disable.Update -bool TRUE
```

See <http://kb2.adobe.com/cps/408/kb408711.html> for more details.

Adobe Acrobat Pro and Reader

Disabling automatic update checks for Acrobat Pro and Reader is a bit challenging. There is no global mechanism; the preference is per-user. Though it is stored in a plist in `~/Library/Preferences`, it's nested in a way that makes it difficult to manage with `defaults` or MCX. One tool that set the correct value is PlistBuddy:

```
/usr/libexec/PlistBuddy -c "Set  
:AVGeneral:CheckForUpdatesAtStartup:1 false"  
~/Library/Preferences/com.adobe.Reader_x86_9.0.plist
```

PDF Expert

PDF Expert lets you read and annotate PDF documents, highlight text, make notes, draw with your finger and save these changes which are compatible with Preview and Adobe Acrobat! Moreover, PDF Expert is the only iPad application that can fill in PDF forms!

- * Manage and edit your documents
- * Fill in PDF Forms
- * Sign PDFs
- * Sync any folder with Dropbox
- * Annotate PDF documents
- * Save bookmarks in PDFs

Available on the App Store

www.readdle.com

The actual name of the plist file depends on the product, version, and architecture of the machine:

Acrobat Pro 9.x:

```
com.adobe.Acrobat.Pro_x86_9.0.plist  
com.adobe.Acrobat.Pro_ppc_9.0.plist
```

Adobe Reader 9.x:

```
com.adobe.Reader_x86_9.0.plist  
com.adobe.Reader_ppc_9.0.plist
```

For Acrobat Pro X and Adobe Reader X, the preference is stored slightly differently, nested inside a dictionary named "10":

```
/usr/libexec/PlistBuddy -c "Set  
:10:AVGeneral:CheckForUpdatesAtStartup:1 false"  
~/Library/Preferences/com.adobe.Reader.plist
```

The preference file is

`com.adobe.Acrobat.Pro.plist` for Acrobat Pro X, and
`com.adobe.Reader.plist` for Adobe Reader X.

See

http://kb2.adobe.com/cps/837/cpsid_83709/attachments/Acrobat_Reader_Updater.pdf for more information.

Adobe Flash Player 10.3

With the 10.3 release of Adobe's Flash Player, Adobe introduced new automatic update notifications. They also documented a method for administrators to disable update notifications here:

<http://kb2.adobe.com/cps/167/16701594.html>. This involves creating a file at `/Library/Application Support/Macromedia/mms.cfg` with the following contents:

```
AutoUpdateDisable=1
```

For an enterprise deployment, one could just push out that file (naked or bundled inside a package) using your favorite software deployment mechanism.

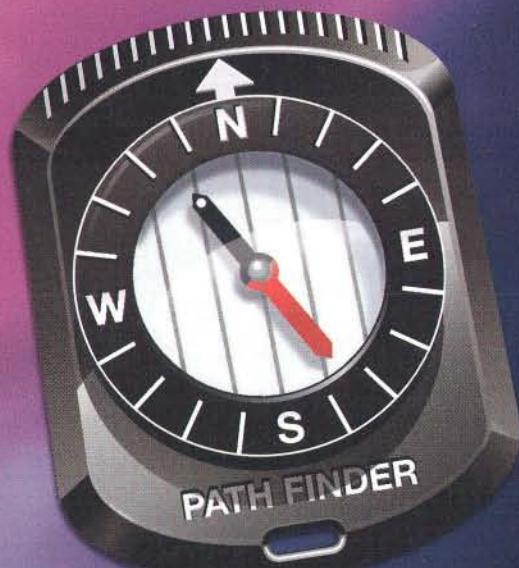
Mozilla Firefox

Firefox stores its preferences, including its auto-update preferences in a manner unlike most other applications. Not only is the preferences file in a unique format, its path is not the same on any two machines or for any two users. Managing Firefox's auto-update behavior is a part of managing Firefox in general. I've written on that subject quite a bit, including in two past issues of MacTech, and several postings on <http://managingosx.wordpress.com>. There are several approaches to actually deploying the preferences that you can choose from the various articles I've written, but the specific preferences for application and extensions updates are:

```
pref("app.update.enabled", false);  
pref("app.update.autoUpdateEnabled", false);  
pref("extensions.update.autoUpdate", false);
```

Path Finder

File browsing just got
more interesting.



www.cocoatech.com

Microchip's development platforms let you easily design & develop an application or accessory for iPad, iPhone and iPod today!



The mobile device marketplace offers the promise of entirely new uses for ever smarter devices. Let Microchip's development platforms help jump start your idea for the next great accessory.

Our kits enable fast and easy development of accessories based on Microchip's large portfolio of 16-bit and 32-bit PIC® microcontrollers (MCUs) and dsPIC® Digital Signal Controllers.

Available Development Kits:

- Digital Audio Development Kit for iPod and iPhone
- 8-bit PIC MCU Accessory Development Kit for iPod and iPhone
- 16/32-bit PIC MCU Accessory Development Kit for iPod and iPhone
- Microchip's MFi Library for iPod and iPhone



Development resources are also available for Android. For more information, visit: www.microchip.com/smartphone

Get Started:

- Ask your Microchip Sales representative to schedule a demonstration
- Enroll in Apple's "Made for iPod" licensing program
- Purchase a development kit through Apple's Made-for-iPod program
- Get Started at: <http://www.microchip.com/MFi>

```
pref("extensions.update.enabled", false);
```

If you want to lock these choices down so that users cannot re-enable update checks, use "lockPref()" instead:

```
lockPref("app.update.enabled", false);
lockPref("app.update.autoUpdateEnabled", false);
lockPref("extensions.update.autoUpdate", false);
lockPref("extensions.update.enabled", false);
```

This article:

<http://managingosx.wordpress.com/2010/01/11/firefox-default-settings-revisited/> might be a good place to start if you are new to managing Firefox.

Conclusion

As you've seen, there are almost as many ways to manage auto-update behaviors as there are applications with auto-updaters. Disabling automatic updates may require the use of many tools and skills. A working MCX setup (even LocalMCX) is invaluable for managing auto-updaters that use Apple's standard preference plists to store their preferences. But you may need to resort to other tools for other software. Some tools you may need to use include defaults, PlistBuddy, packaging tools, launchd LaunchAgents, and third-party deployment, provisioning, and/or configuration tools.

The sheer number of applications that have some sort of auto-update behavior, and the work needed to discover and implement a method to disable auto-updates for each application may make you discouraged that you'll ever be able to control them all. It might be too time-consuming to make sure automatic updates are turned off for every single piece of software you deploy. If this is the case, focus your efforts on software used by the largest numbers of your client base. Additionally, make use of any help the software vendor may have provided. If the vendor has provided a method to turn off automatic updates as part of the initial installation, take advantage of it!



About The Author

Greg Neagle is a member of MacEnterprise (macenterprise.org) and is a senior systems engineer at a large animation studio. Greg has been working with the Mac since 1984, and with Mac OS X since its release. Greg Neagle and Edward Marczak's book: *Enterprise Mac Managed Preferences*, which covers Apple's *Managed Preferences*, was recently published by Apress. Greg can be reached at ggregneagle@mac.com.

web and mobile recorder works on the Mac

As an IT professional, you need reliable website performance monitoring solutions that work seamlessly with Macs. DéjàClick™ is the only inside-the-browser transaction monitor that runs and tests site transactions like a real user—and it's the only one that runs natively on the Mac. AlertSite's industry-leading TrueUser™ technology identifies slowdowns and other frustrating site problems—before your customers do. Take a fresh look at your website with a free trial at AlertSite.com/mactech. We'll give you a \$15 Starbucks gift card for giving it a try.*



Your customers count on you. Count on AlertSite.



AlertSite.com/mactech 877.302.5378

© 2011 SmartBear Software. All rights reserved. *Must pre-qualify to receive offer

STILL SOLID. WAY COOLER.



Keep your computers indestructible,
free up crucial IT resources, and reduce
support costs by 63%.

Faronics Deep Freeze automatically restores
workstation configurations with every reboot.

For more information, visit
www.faronics.com

 **Faronics™**

Available for:



Leveraging Windows Servers to Bring Sanity to Large-scale iOS Operations

by Charles Edge

Introduction

iPads, iPhones and iPod Touches run the iOS operating system. The iOS platform brings with it an entirely new way of dealing with computers in enterprises. Forget bare metal imaging, forget multi-user operating systems and forget scripting large-scale operations on client computers. But just because a new paradigm has been introduced you don't have to forget the whole idea of centralized management.

The enterprise integration of iOS is still one that lacks maturity. The frameworks (APIs) from Apple for such integration are still less than one or two years old in many cases. Compare this to some of the technology built into Mac OS X that is 10 or 20 years old and you have a completely new playing field. Combine the platform's lack of tenure with the rapid sales growth of iOS based devices at 14 million iPads in the first year and all of a sudden you have a serious challenge for many enterprises; one without an officially sanctioned compelling story for large scale operations. To some degree, the lack of such a story is quite possibly because it is a new paradigm. It's one where you have to forget much of what you know about how to run IT and start anew.

But how's this for a compelling story? A user cannot break an iOS based device by installing an application. Let's repeat that, your users cannot break the operating system on their device even if they want to. You need to ensure that they operate securely, and in this article we'll look at some ways to make sure that they do so. However, if one argument behind stringent policies has always been lowering support costs then if a user cannot break a device and operates securely then how many policies do you need? This is just one example of how a new platform brings with it a new outlook on IT operations.

Few people should use a device without a pass code and a few basic security precautions. Users need access to file servers. The growth of iOS based products in large environments means that there are more and more enterprises looking to adopt a platform that enables services similar to those available for other platforms. The Enterprise Desktop Alliance (EDA) has developed

a strategy for leveraging existing Windows Server administrators and infrastructure in order to provide command, control and connectivity services to Mac OS X clients; and now to iOS based clients as well.

The EDA includes Absolute Software, Centrify, GroupLogic, IBM and WebHelpDesk, all able to run on Microsoft Windows Server 2008 R2. Of these, the following vendors fill very specific voids for the integration of iOS based devices:

Absolute Software: Endpoint management for PCs, Macs and iOS devices

GroupLogic: Providing centralized file sharing services from Windows file servers

IBM: Web and groupware services as well as highly available Windows Server hardware

WebHelpDesk: Trouble ticketing and inventory management

This ecosystem provides systems that work very well together or independently, maximizing the efficiency of staff and giving administrators replicable, highly available, well documented and vendor supported infrastructures. In this, the final installment of the EDA series on moving from Mac OS X Servers to Windows Servers, we will change direction a little bit, much as Apple is doing, and take a deep dive into the immature realm of integrating iPhones, iPads and iPod Touches en masse, as first class citizens on enterprise networks.

As we have been showing throughout this series of articles, the move from Mac OS X Server to Windows Server to support Mac OS X clients can be less cumbersome than many previously thought. The platform is considerably more scalable, with virtualization end-to-end and true high availability options. And in many environments, Active Directory has been integrated for years and so administrators are already well versed in Windows Server administration basics. The impact of replacing systems on existing middleware components though, can be amongst the most impactful. In this article we will go a step further and extend the options for Mac OS X clients over to iOS clients, so these devices can have the failover and cluster-ability that they

Got Macs? Got Windows Servers? Get them working together.



Administrator's Windows Environment

Absolute®
Software

Client
Configuration

 Centrify®

Active Directory Integration
Group Policy for Mac

 ExtremeZIP.

File Server &
Print Server

 Web Help Desk

Help Desk &
Knowledge Base

User's Mac Environment



It actually **IS** easy to deploy, integrate and manage Macs
in a Windows environment. Visit us to learn how:

www.enterprisedesktopalliance.com

©2010 Enterprise Desktop Alliance

Enterprise Desktop
ALLIANCE

will require as adoption continues to scale to meet the desires of users.

Management Please?

As we showed in previous articles, large-scale management of Mac OS X means imaging, managed preferences, package management, a little scripting and a lot of control. These are handled a bit differently in an iOS world than for Mac OS X. For starters, there is no bare metal imaging for iOS. You do not lay raw bits on devices. Instead you build profiles with settings that are required and then assign those profiles to devices. These profiles can be created using iPhone Configuration Utility and then applied to devices through USB or over the air using email or SMS. This represents a huge move away from the NetBoot/asr combo-punch that is imaging for Apple desktops and portables.

Imaging is different, as is policy management. iOS provides control equivalent to managed preferences in what is known as Mobile Device Management, or MDM for short. MDM allows for over the air management of iOS based devices. MDM takes the options available in iPhone Configuration Utility and makes them available to iOS based devices. Think of a configuration profile from iPhone Configuration Utility as a wired configuration tool and then MDM as a means to long-term manage those features over the air.

Package and patch management are also a very different option en masse. Consider Software Update in Mac OS X: users are prompted to install updates, administrators can centrally release patches using Mac OS X Server or Absolute Manage and deploy software through Apple Remote Desktop, Absolute Manage or Centrify, without any interaction with end users. None of these are possible in iOS. Application installations and software updates are end user, or device initiated processes. Whether you need to install an application from Apple's app store, update the operating system on devices or initially enroll a device in a MDM environment so it can be centrally managed, you or a user will need to initiate those processes. There are ways to ease this burden, but none to eliminate it.

iTunes

A number of enterprise environments do not allow access to iTunes. Sure, it is possible to manage iOS based devices without iTunes. But it is no simple task. Restricting access to options with iTunes is also a challenge. The policies put in place in many an enterprise that restrict iTunes from accessing Apple servers are going to mean that major operating system updates cannot be installed for iOS based devices as those usually work using each clients instance of iTunes to connect to Apple's servers.

Operating system updates cannot currently be performed over the air. A new iOS version will some day need to be installed. If users do not have access to iTunes, this will be a challenge to say the least, as each user is going to need to bring their iOS devices into a central location. For environments that allow iTunes, keeping operating systems up-to-date means

cradling the device and when prompted, clicking on Download and Update, as seen in Figure 1.



Figure 1 – Updating iOS Software

Backups also need iTunes. When users synchronize iOS based devices with iTunes, iTunes makes a backup of the device automatically. Devices can also be backed up by right-clicking on the device in the iTunes sidebar and clicking on backup. Users can see when devices have been most recently backed up by clicking the Devices tab in iTunes Preferences.

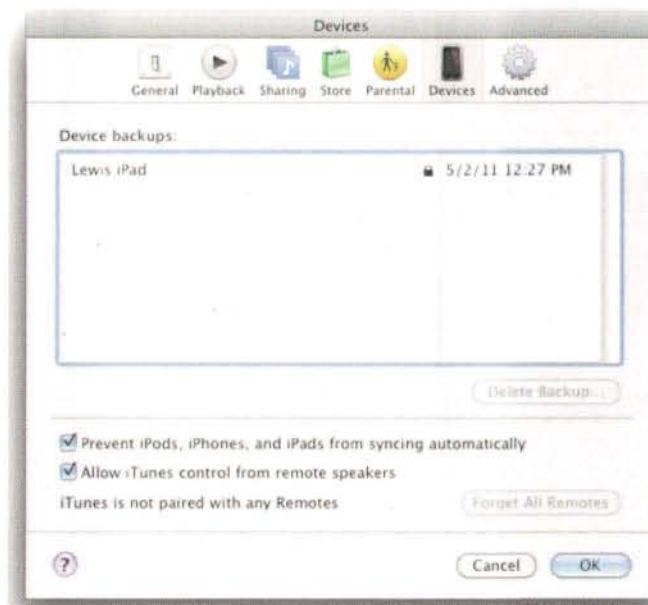


Figure 2 – Accessing iTunes Backups

iTunes is also required for restoring devices. Restoration is available either by right-clicking the device in the iTunes sidebar and clicking on Restore from Backup or by using the Restore button when the device has been selected within iTunes (manual updates can also be run from this screen and backups can be configured to be encrypted here as well).

If an organization isn't willing to provide access to iTunes, backup and restoration is still possible either by setting up a

MANAGING YOUR MOBILE APPLE DEVICES JUST GOT EASIER

Absolute Manage Device Management for iOS4

Our technology is designed to work within a Windows or Mac environment so you can use whatever you already have in place.

And your IT administrators will love you since Absolute Manage MDM can be driven using a Mac or a PC. Now everyone on the team can be an Apple iOS4 expert!

Asset Inventory

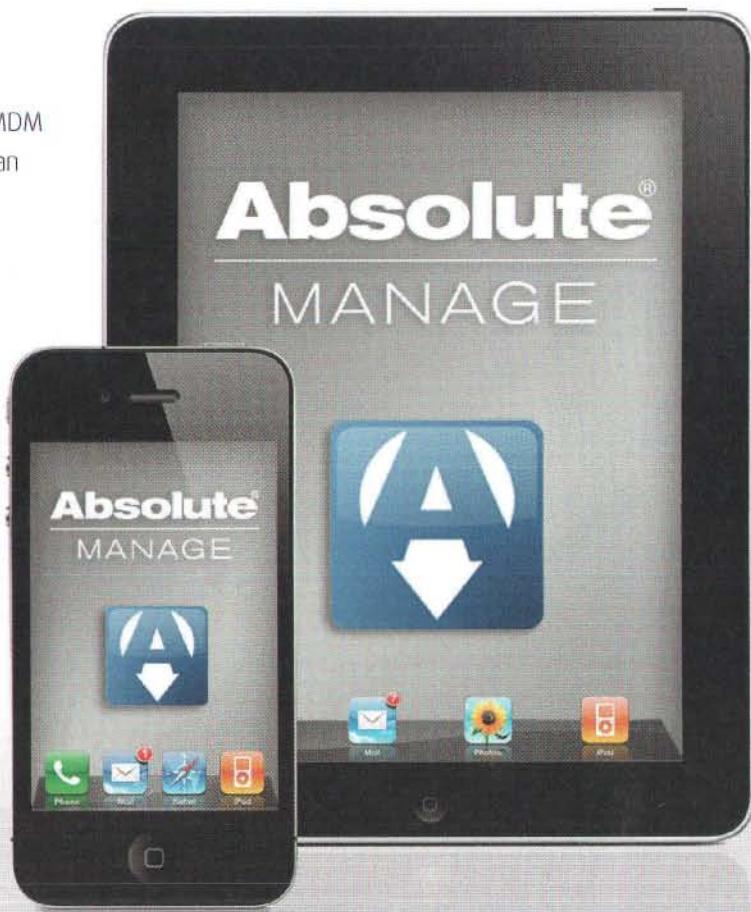
Gather 60+ hardware and software data points and integrate the data into third party applications (SCCM, Web Help Desk, etc.)

Data & Device Security

Lock a device, clear a password, wipe a device clean, manage and deploy profiles, send messages to end users

Application Management

Track installed applications, collect data from each device, securely host and deploy in-house applications



Try it yourself! Visit our product evaluation page:
www.absolute.com/MacTech

© 2011 Absolute Software Corporation. All rights reserved. Computrace and Absolute are registered trademarks of Absolute Software Corporation.

Absolute®Software

The absolute best way to track, manage & protect your digital world.



Figure 3 – Using iTunes to Manage iOS Devices

synchronization station or a computer at an internal genius bar for doing so. By default, iTunes will attempt to backup a device when plugged in. When each iOS based device is first used (or wiped), it will need to be activated. Doing so requires plugging a device into iTunes, which means that if a user has their iPhone wiped while on the road and just wants to make phone calls, they will first need to plug the device into iTunes.

When administrators are only looking to activate a lot of devices, the backup and other options in iTunes will get in the way. When loading software, configuring wireless networks and enrolling devices with management environments the device will need to be plugged into iTunes at least once, even if all other setup options will be done over the air. Therefore “iTunes Activation Mode” ejects a device once it’s been activated rather than synchronizing or backing up the device. By setting iTunes to activation mode, administrators can reduce the number of touches for the activation process. To do so, use the defaults command to write a 1 (or TRUE) into the StoreActivationMode key into com.apple.iTunes.plist:

```
defaults write com.apple.iTunes StoreActivationMode -integer 1
```

iTunes also has a genius mode, which is used to configure computers to be able to backup and restore iOS devices. Genius mode does not associate a device to a computer and can be used to setup a backup station in environments where iTunes is not accessible. To activate genius mode use the defaults command to write a 1 (or TRUE) into the StoreGeniusMode key:

```
defaults write com.apple.iTunes StoreGeniusMode -integer 1
```

Both of these can be disabled by closing iTunes and then deleting the respective key. Both are also available in Windows using the process explained at <http://krypted.com/iphone/itunes-and-mass-activation>.

iOS updates can be installed using iTunes or using Xcode Organizer. Xcode organizer is available in the Apple Xcode tools (distributed with each copy of Mac OS X) provided you have an iOS developer certificate.

iPhone Configuration Utility

iPhone Configuration Utility is a tool, distributed by Apple at <http://support.apple.com/kb/dl926> (for Windows) and <http://support.apple.com/kb/DL851> (for Mac OS X). iPhone Configuration Utility can be used to create “profiles” in the form of .mobileconfig files. These files are property lists containing

settings that a device will have when deployed. This is similar to how the "Once" Managed Preferences work. Users can change settings once they are deployed, but will have the "blessed" settings as their initial configuration.

These Configuration Profiles allow administrators to do much of the initial setup work with a minimal amount of effort per device, prior to placing iOS based devices in the hands of users.

The iPhone Configuration Utility also allows administrators to make what are known as Provisioning Profiles. Provisioning Profiles deploy internal software to devices. These can include applications currently pending submission to the App Store (e.g. beta software) or applications built for internal use at an organization. Prior to using iPhone Configuration Utility to deploy a software package, administrators would need an exported application package from Xcode. Provisioning Profiles are stored as .mobileprovision files rather than .mobileconfig files. For more on provisioning software, see the Apple developer site at

<http://developer.apple.com/devcenter/ios/index.action>.

iPhone Configuration Utility stores its data in the ~/Library/MobileDevice directory. Here, Configuration Profiles and Provisioning Profiles are stored in directories of corresponding names. Names of each profile are hexadecimal-based, followed by the corresponding extension type. Additionally, devices are stored in a Devices subdirectory, with each having a file that is named based on the Identifier of the device. Profiles can be exported and then copied to a web page, emailed to devices and installed over the air, or deployed through iPhone Configuration Utility.

Building Configuration Profiles

To build a configuration profile, first install the iPhone Configuration Utility. Once installed, open iPhone Configuration Utility and click on Configuration Profiles in the LIBRARY sidebar. Here, a list of options, including General, Passcode, Restrictions, Wi-Fi, VPN, Email, Exchange ActiveSync, LDAP, CalDAV, CardDAV, Subscribed Calendars, Web Clips, Credentials, SCEP, Mobile Device Management and Advanced, will be provided. These allow administrators to deploy settings of each type to iOS based devices.

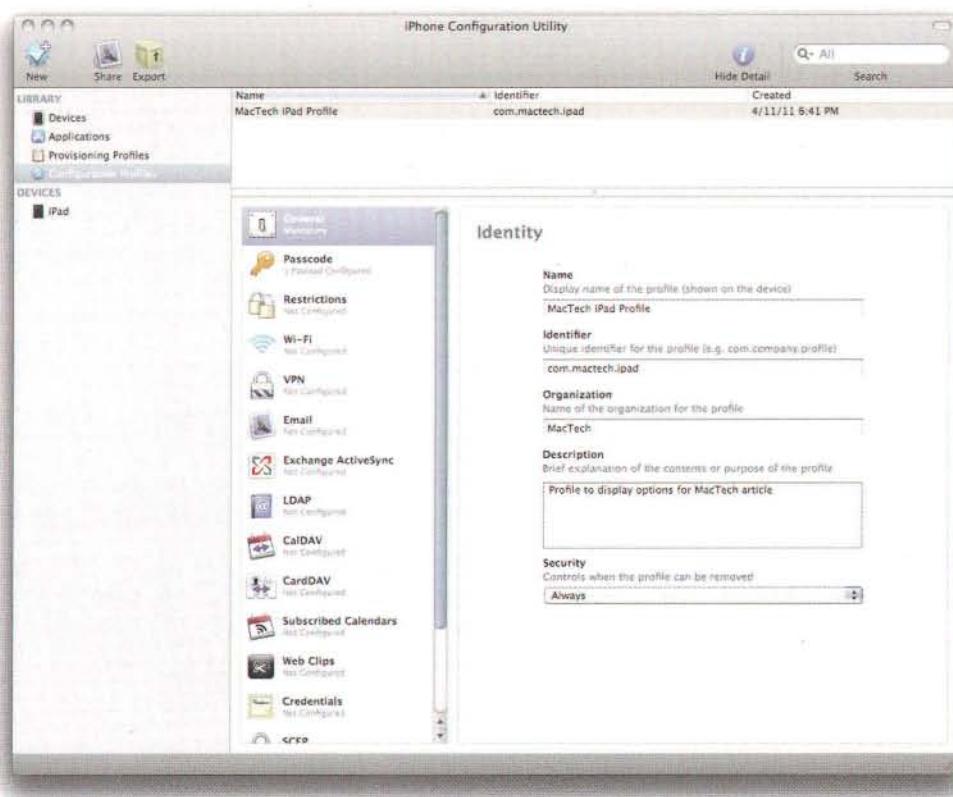


Figure 4 – Creating a Profile in iPhone Configuration Utility

The General settings are required. This is where the identity of the profile is created. Similar to an OS X installer package in that a unique identifier will be created. In the example provided, we used com.mactech.ipad as the unique Identifier and MacTech iPad Profile as the Name. Both of these can be seen on the device, as can the Description. Whether or not an end user can remove a profile is set using the Security field in this screen, with options of Always, With Authorization and Never. It is recommended to use With Authorization and Always, as in order to remove a Configuration Profile with Security set to Never, administrators will need to wipe the device.

Once you have configured the General settings, choose which of the other settings that should be configured. These include:

Passcode: Used to force a passcode and then control the complexity, history requirements and acceptable characters of a passcode. Also used to configure device lock settings, grace periods for device locks and how many invalid attempts to allow prior to wiping the device.

Restrictions: Allows configuration of options otherwise found using the Settings App and then tapping on Restrictions.

Wi-Fi: Sets up wireless networks that a device will have access to and allows caching of credentials for wireless networks that require passwords.

VPN: Configures VPN client and allows proxy configuration for VPNs.

Email: Used to install POP and IMAP mail accounts.

Exchange ActiveSync: Deploys settings for Microsoft Exchange servers.

LDAP: Sets up LDAP server, user, password, SSL and Search Base.

CalDAV: Defines settings for CalDAV servers.

CardDAV: Defines settings for CardDAV servers.

Subscribed Calendars: Subscribes to calendar files (read-only).

Web Clips: Closest option available to pushing software to a device, allows for deployment of web clips that can be used to access web applications or other web sites.

Credentials: Deploy certificates to devices.

SCEP: Deploy certificate servers to devices.

Mobile Device Management: Install MDM Certificates on Devices.

Advanced: Configure carrier access points.

Most environments will only use 3 or 4 of these options at most. For environments using MDM, it is likely unwise to configure other settings in the Configuration Profile that june conflict with those deployed by the MDM server (more on MDM in the MDM section of this article). The settings here can be specific to a device or left generic.

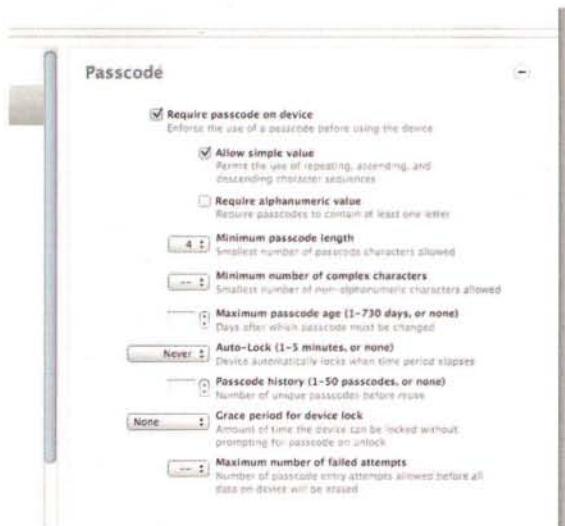


Figure 5 – Passcode Settings in iPhone Configuration Utility

Exporting .Mobileconfig Files

Once configuration files have been created, they can be exported. Configuration Profiles are exported into a property list structure known as a .mobileconfig file. To export a Configuration Profile:

- Open iPhone Configuration Utility.
- Click on Configuration Profiles in the LIBRARY sidebar.
- Choose the Configuration Profile to export.
- Click on the Export button in the application toolbar.

Set the Security of the exported .mobileconfig file. Options include:

None: No encryption will be used.

Sign configuration profile: The configuration profile will contain a digital signature so if it is altered, administrators will know.

Create and sign encrypted configuration profile for each selected device: Signs and encrypts profiles.

Choose the device that the profile will be exported for (if profile is signed and encrypted).

Click on Export...



Figure 6 – Settings for Exported Profiles

Choose a location to store the profile.

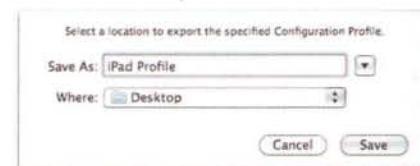


Figure 7 – Exporting Configuration Profiles

Profiles can contain a good bit of information about the security of an iOS based deployment. Configuration Profiles help to automate the deployment of large numbers of iOS based devices, but the long-term configuration management needs of most organizations will require the ability to push changes to devices. This is where MDM comes into play.

Configuration at scale using MDM

MDM, or Mobile Device Management for short, is an API from Apple that allows the options in a .mobileconfig file to be pushed to devices over the air, leveraging Apple's Push Notification Service. MDM goes further than the options in .mobilconfig files also allowing administrators to wipe, lock and reset passcodes on devices Over the Air (or OTA). Deployment is very important as environments scale into enterprises. While .mobileconfig files can be deployed over the air using web and

I go both ways.

I use a PC.

I use a Mac.



For 20 years now, Group Logic solutions have been helping Macs and PCs get along. Over 100,000 Mac users rely on our ExtremeZ-IP solution to seamlessly access Windows-based digital assets without compromising performance, usability, or reliability. To learn more how we can help you, please visit us on the Web at www.grouplogic.com or call 800.476.8781 / +1.703.528.1555.

FREE TRIAL

www.grouplogic.com/eztrial



GroupLogic.

Access. Share. Extend.

© 2010 Group Logic. All Rights Reserved.

Group Logic is a Proud Member of

Absolute®
Software

Centrify®

ExtremeZ-IP

Web Help Desk

Enterprise Desktop
ALLIANCE

email, MDM enrolls devices and allows administrators to control settings on devices centrally in an object-oriented fashion.

MDM Requirements

Hosting an MDM solution is a must for many organizations. But doing so comes with a number of requirements. Enterprises that will be using an MDM solution will need an Enterprise developer's certificate from Apple. Obtaining an Enterprise Developer Certificate from Apple can be done at <http://developer.apple.com>. Before beginning the process, it is worth noting that Apple has a number of requirements for obtaining an Enterprise certificate, including enrollment in the iOS Developer Enterprise Program (<http://developer.apple.com/programs/ios/enterprise/>), which requires a valid Dun & Bradstreet Number (DUNS) and a \$299 per year enrollment fee.

The Developer Certificate is used to create an MDM Push Notification Certificate in the Apple Provisioning Portal. To install an MDM solution, a valid SSL certificate will also be required. Finally, if deploying applications, an In-house Distribution Certificate will need to be generated in the Apple Provisioning Portal. Once all of the MDM requirements have been met, then installation of the software for any of the MDM providers can commence.

Absolute Manage

Absolute Manage is a solution that allows for centralized management of Mac OS X, Windows and now, iOS based devices. The management of iOS based devices is done through MDM using the same Admin Console already used to manage the other platforms, making it a seamless integration for environments that have already invested resources into training their staff on the product. Absolute Manage also brings with it the ability to run on Mac OS X or Windows.

Here, we will look at leveraging Absolute Manage to provide MDM services to iOS based devices, as it can be run on a Windows Server. The management tools themselves will be run from a Mac OS X 10.6 client system.

Leveraging MDM, Absolute Manage can centralize management for iOS based devices and track applications that have been installed as well as many of the common settings used on devices. To get started, first follow the steps outlined at

The screenshot shows a 'Configure Columns' sidebar on the left with categories like BUILT-IN, APPS & PROFILES, POLICIES, and COMMANDS. The main pane displays device details for 'Paul's iPhone'. The columns are Information (e.g., iOS Device Name, iOS Device Model, iOS Device Model Number) and Data (e.g., Paul's iPhone, iPhone 3GS (32 GB, black), MB123LL). Other visible data includes iOS Version (4.1), Build Number (8B123), Device Serial Number (12345PUAONR), and various network and hardware parameters.

Information	Data
iOS Device Name	Paul's iPhone
iOS Device Model	iPhone 3GS (32 GB, black)
iOS Device Model Number	MB123LL
iOS Version	4.1
iOS Build Number	8B123
iOS Device Serial Number	12345PUAONR
iOS Device Phone Number	15555555555
iOS Device Last Contact	11/1/10 5:58:41 PM
iOS Device IMEI	01 234567 890000 0
iOS Device Identifier (UDID)	01abc234567def8900ghi01a1bc23def4ghi5678
iOS Device Capacity	29.33 GB
iOS Device Available Capacity	26.23 GB
iOS Device Bluetooth MAC Address	12:34:5a:bc:67:89
iOS Device WiFi MAC Address	12:34:5a:bc:67:8a
iOS Device IPv4	24.12.345.6
iOS Device Status	Online
iOS Device Managed	Yes
iOS Device Modem Firmware Version	05.14.02
iOS Device Hardware Encryption	Block-level and Block level
iOS Device Passcode Compliant	Yes
iOS Device Passcode Compliant With Profiles	Yes
iOS Device Passcode Present	Yes
iOS Device is Roaming	n/a
iOS Device is Data Roaming	No
iOS Device Current Carrier Network	n/a
iOS Device Home Network	AT&T
iOS Device Current Mobile Country Code	n/a
iOS Device Current Mobile Network Code	00
iOS Device Home Mobile Country Code	310
iOS Device Home Mobile Network Code	410
iOS Device Carrier Settings Version	8.0
iOS Device SIM ICC Identifier	9876 5432 1012 3456 7890

Figure 8 – Viewing Device Information in Absolute Manage

the following website to perform the installation of Absolute Manage MDM: <http://macte.ch/AMMDM>.

Once installed, use the Absolute Manage Admin utility. From there, devices will be available by selecting Mobile Devices from the Window drop-down menu. From the iOS Devices screen, there are a number of built-in groups for iOS based devices, broken down by each of the hardware platforms capable of running iOS.

Here, the MAC addresses, firmware versions, serial numbers and other device-specific information can be seen per device. Administrators can also use the disclosure triangle beside each device to look at installed Applications, Certificates, Provisioning Profiles and Configuration Profiles assigned to each device.

Enrollment

Now that we have shown how to see iOS based devices, let's look at the process to enroll a device in Absolute Manage. Once Absolute Manage has been setup and configured, a standard enrollment page will be accessible. Administrators can host the enrollment bootstrap file on any web server and protect the file in a variety of ways. The file can be accessible to anyone, protected with a password or protected with a username and password that is tied into the authentication provided by an Active Directory server. Provided users can get to the page, they will authenticate and then be enrolled.

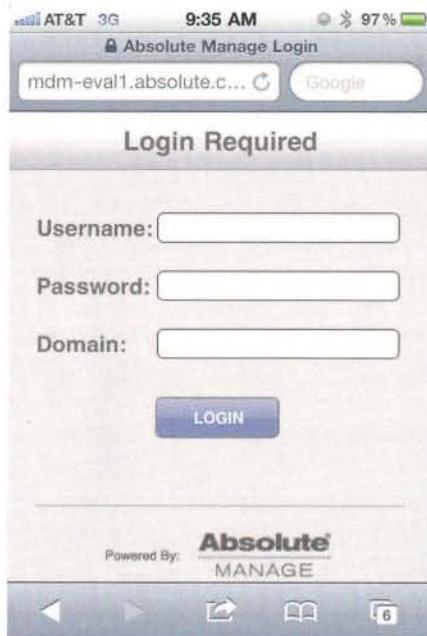


Figure 9 – Absolute Manage Enrollment

Managing Devices

Once enrolled it will be possible to manage devices in a variety of ways. Similar to how Find My iPhone works for MobileMe users, administrators will be able to use Absolute Manage to lock devices, reset passcodes and remotely erase devices. It is also possible to send messages to devices and manage policies. All of this can be done per device or based on group memberships.

To perform one of these tasks, simply open the Absolute Manage Admin utility and select Mobile Devices from the Window drop-down menu. From the iOS Devices screen, right-click on the device and then choose the appropriate task or policy to enforce on the device.



Figure 10 – Managing Devices Using Absolute Manage

Many of these options involve immediate actions, such as locking a device. Policies that were created in iPhone Configuration Utility can also be applied, allowing Absolute Manage to handle any options that Apple provides using a configuration profile.

Push Web Links

A common misconception in MDM environments is that MDM can be used to “push” out applications in the same way that MDM can push out configuration changes such as wiping a device and enforcing passcodes. However, no MDM provider can push applications to devices. But MDM solutions can push web links to devices. This allows pushing access to a web application to iOS based devices and enabling quick installations through MDM.

The best way to push a link that will open a web application to an iOS based device is to assign a configuration profile to the device. The configuration profile is created in iPhone Configuration Utility, a process covered earlier in this article. It is also possible to push a webclip, but a webclip would only contain a URL. For example, a URL to an ePub or PDF doc that could then be opened on the device; the webclip we use to deploy Absolute Apps to the device; a link to an internal help desk or any other web site. Instead of a webclip, a configuration profile can be created on the fly, using imported Active Directory data. Deploying this profile sets up Exchange email on the device. Removing this profile (which can be done over the air) removes email access, as well as access to all associated calendar events and email messages.

Once the configure file is ready, open Absolute Manage Admin and then from the Window menu, select Mobile Devices. At the Mobile Devices screen, go to the iOS Devices screen, open APPS & PROFILES and then use a contextual menu to upload a new profile.

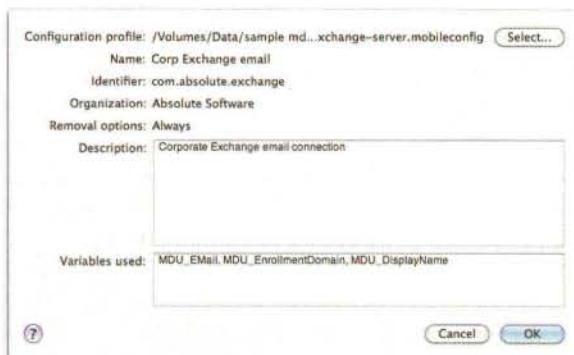


Figure 11 – Uploading a Profile

To then select the newly uploaded profile, from the iOS Devices screen, right-click on a device or group of devices and then click on Install Provisioning Profile. Then select the profile you just uploaded and click on OK.



Figure 12 – Assigning Profiles to Devices

As mentioned, MDM cannot be used to push an application to an iOS based device. While MDM is flexible and provides a number of great features, there are limitations to what it can do. In addition to not being able to push an application, MDM also relies heavily on certificates. If the MDM certificate is removed then the client management tools can no longer control the device. In some cases this is desirable, such as when a device is being decommissioned. But the fact that administrative access to a device allows users to remove policies is also a good incentive to restrict access to administrative options on iOS based devices.

Via the Absolute Apps on-device self-service portal, Absolute Manage MDM can publish a list of “recommended apps” for users. Even though the user must still initiate the install, this makes the iTunes Store invisible in the process. Through Smart Groups and Policies, administrators can ensure the right apps are installed – and the wrong ones are not – even though final control is in the end user’s hands.

Now that we’ve taken a good look at MDM, we’re going to move on to more workflow oriented topics in the remaining sections. First up, getting to files that are stored on your servers.

File Access

A basic computing task that many take for granted is opening, editing and then saving documents. This is so basic a task in organizations, from schools to small businesses to the corporate enterprises, that it has at this point become an assumed feature included with all operating systems. To go a step further, it’s also taken for granted that each operating system will also interconnect with servers of other operating systems, and for the most part this is a valid assumption. This is not the case with iOS.

One of the things that makes iOS so unique is that the operating system obfuscates the underlying filesystem. As such, there is no /Volumes directory as in Mac OS X. In fact, applications are disconnected from one another as each is in its own sandbox. Instead of having a filesystem accessible to all applications, each application installed in iOS has a filesystem of sorts. If there is no global filesystem then it stands to reason that

there is no integrated file server client (there’s not). Enter mobileEcho!

mobilEcho

mobilEcho is a new product from GroupLogic, the makers of ExtremeZ-IP. mobilEcho enables users to connect to file shares that are hosted on a mobilEcho server and therefore accomplish one of the most common tasks that needs to be done by most any computer in an enterprise: access files. The installation process for mobilEcho can be performed in most environments by simply accepting the default options during the installer. Once installed there are two aspects of configuration.

The first is making file shares available to iOS based devices. This is done using tools that will be very familiar to existing users of ExtremeZ-IP for accessing Windows file servers (tools covered in earlier articles of this series). The shares connect over SSL rather than AFP, and so, are more ‘native’ to iOS while at the same time being secure. Remote connectivity to the shares is performed through a VPN connection back to the main office, configured separately.

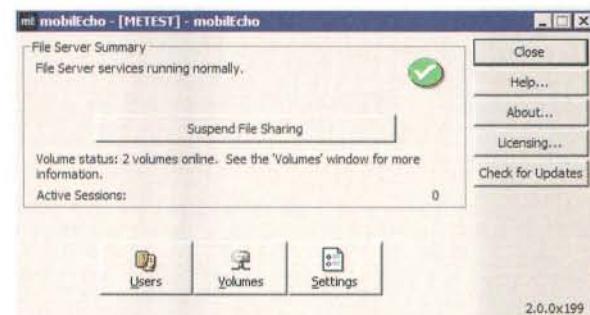
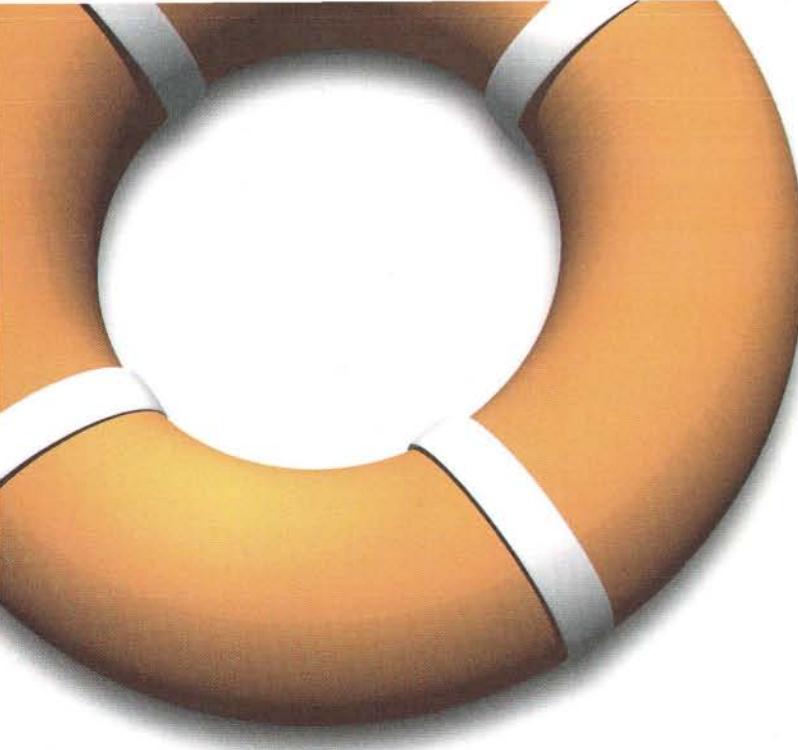


Figure 13 - Configuring Shares in mobilEcho

The second aspect of installation is centrally managing the data and settings stored in the mobilEcho application. Configuring centralized management is done with the Client Management Administrator, distributed with the installation tools. The reason this is such a critical aspect of mobilEcho is that centralized client management allows administrators to craft which shares users see using profiles, provide user accounts specific to mobilEcho, provide access to multiple file servers, limit the options users have when accessing files and wipe the mobilEcho data on devices. The last item is particularly interesting because many environments allow users to access files and folders from personal devices. This provides a mechanism to remove data owned by the organization from devices without actually wiping a user’s personal data.

Managing the User Experience

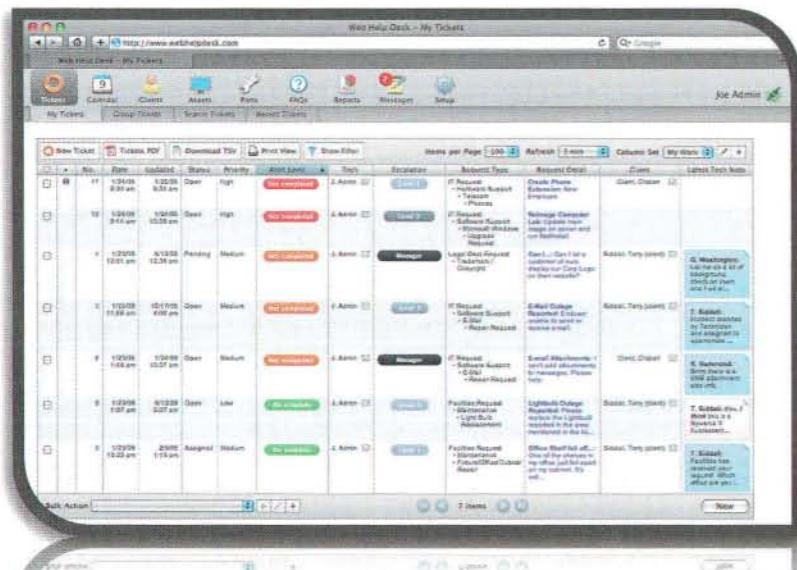
To access file shares, users will need to configure the application and have their appropriate servers and shares displayed. Configuration can be automated somewhat using the Client Management Administrator. Here, users and groups



Help Has Arrived.

Web Help Desk

Powerful Software for Service Management



Web Help Desk is the leading cross platform service management solution for support professionals seeking to simplify and control their increasingly complex service management environments.



Web Help Desk is a Proud Member of

Absolute[®]
Software

Centrify[™]

ExtremeZIP[®]

Web Help Desk

Enterprise Desktop
ALLIANCE

(groups can be based on membership in a directory services-based group) can be configured to access mobilEcho, above and beyond the standard credentials used to support connecting to file shares.

Once the Client Management Administrator is installed, to add a group, click on Groups in the upper right hand corner of mobilEcho and then click on the Add new group button. Each group in an LDAP based directory service will have a unique identifier that is addressable based on the relative location of that group in the domain. At the screen for adding a group, administrators will supply the Distinguished Name (DN) for the group.



Figure 14 – Creating Groups in mobilEcho

Once the group has been configured, it will need a profile. The profile defines the servers that users within the group can access as well as what kind of access to objects stored on those servers that a user will have. Additionally, security features such as whether the application will require a passcode to unlock, the length of the passcode (if required) and whether or not the application will cache files. Once all of the appropriate settings are configured for a group, click on the Save button (you can also configure policies for users instead of groups, but this is tedious for larger environments).

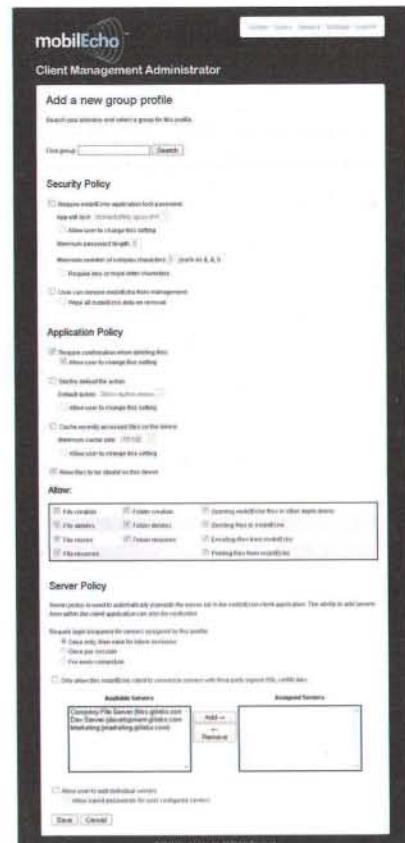


Figure 15 – mobilEcho Group Settings

Users can then access mobilEcho. If a device falls outside of organizational control, or if the user leaves the organization then mobilEcho's centralized management features allow administrators to remotely remove data from the mobilEcho application.



Figure 16 – Resetting User Passwords

Configuration data (which shares a user has access to, etc) is stored on the server and accessible to users no matter which device they connect from. This allows for quick restoration of user data, locking devices without needing to be concerned with the state of data that should be stored on servers and quickly

restoring settings in the event that a device is retired, lost or stolen.

Editing Documents

Users can edit documents in any application that can open each type of document by leveraging the clipboard built into all iOS based devices. Users locate files and shares using mobilEcho and then click on the blue button beside the files to bring up a menu of options of what to do with the files. By using the Open In... option in this menu for a given file it can be accessed using any application that supports the file type.

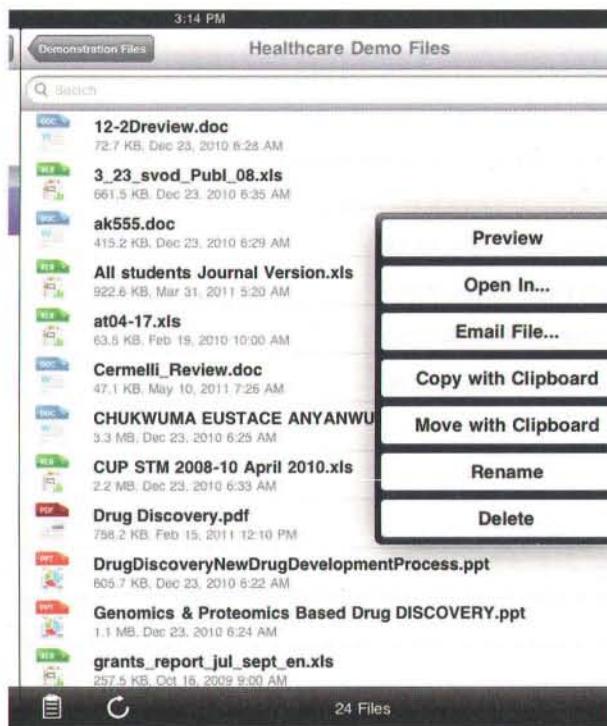


Figure 17 – Using Open In... to Access Files From Other Applications

There are many applications that can edit commonly used document types. These include tools such as Office² HD and of course the iWork suite consisting of Pages, Numbers and Keynote. Most applications also now support the ability to Open In..., the same tool used to get a document to open from within these applications. Using this same option, users should see mobilEcho as an option to open documents in, an act that opens the file in mobilEcho so it can be saved back to the file server after being edited. Files can also be cached locally on the device using the File Inbox and My Files options, allowing users to work on files while offline.

Accessing mobilEcho Remotely

Currently, mobilEcho connects iOS based devices to file servers that reside on the same network. A VPN allows users to

be on the same network as their file servers so that users can quickly and easily access files while outside of the main network. Most environments will already have a robust VPN environment and iOS natively supports accessing many of the VPN servers and protocols in use today.

In addition to VPN, a reverse proxy can also provide access to mobilEcho for remote users. A reverse proxy is a server that is exposed to the Internet (eg – sitting in a Demilitarized zone) that is used to access resources on behalf of a client (which often sits outside of a network). There are a plethora of tools available to build reverse proxies, including Microsoft® Internet Security and Acceleration (ISA) Server, Squid (in Reverse Proxy mode) and even Mac OS X Server. For more information on ISA Server see <http://technet.microsoft.com/en-us/library/bb898432.aspx>.

The iOS Help Desk

Web Help Desk and iPhones are a perfect companion. Especially when those on a service desk are actually supporting iOS based devices! As the name implies, Web Help Desk is a web-based help desk and ticket management system. The installation and management of Web Help Desk was covered in previous articles in this series, but the focus here is on using the Web Help Desk Mobile app as a tool that runs on an iPhone (or iPod Touch).

Web Help Desk Mobile is freely available at <http://itunes.apple.com/us/app/web-help-desk-mobile/id385247187?mt=8>. Once installed, configuration is simple: at the opening screen, provide the address, username and password for the account that will be using Web Help Desk. Optionally, the icon badge for the app can be configured to show users how many alerts they have, a sound can alert users when they have new messages and an alert can show users information about those tickets.



Figure 18 – Configuring Web Help Desk Mobile

Once the settings are configured appropriately, click on the Done button to be placed at the Home screen. Here, users will see the number of tickets assigned to them, see a list of group

tickets, be able to search for tickets and be able to search for client systems, putting centrally stored information about computers in the palms of support engineers so they can stay engaged.



Figure 19 – Viewing Tickets

Tickets can then be browsed and viewed. Similar to viewing mail, when tapped on Web Help Desk Mobile will show details of the ticket and allow technicians to make notes on tickets, change the status and perform a number of other tasks. When support staff is empowered to leverage mobile devices, tickets can be closed faster and without having support staff carrying additional devices to communicate with the back office.



Figure 20 – Ticket Details

Many aspects of bringing sanity to an iOS world are infrastructure related. Web Help Desk Mobile is a perfect

example of one aspect of iOS that can help bring sanity to infrastructure and a perfect compliment to many help desk environments.

Conclusion

iOS is a rapidly growing platform. In many enterprises, the number of iPads, iPhones and iPod Touches now exceed the number of Mac OS X based computers. The platform is young though, and products that can be used to centrally manage and interconnect the popular devices to other solutions are few and far between, leaving many a lucid administrator in need of a sanity check. In this article we focused on a few such tools: iPhone Configuration Utility, Absolute Manage, mobilEcho and Web Help Desk.

One aspect of iOS that is so appealing to users is the wealth of applications that are available for the platform. Therefore, it should be of no surprise that there are many applications reaching a stable and mature state that IT departments can make use of to harness the platform. The tools covered in this article are meant to showcase centralized management (Absolute Manage), content distribution (mobilEcho) and using the device to carry out tasks common in a user's day (Web Help Desk). However, each environment is different and so the needs of each environment will also be different.

Maximizing productivity is important to justify any technology tool. Security and scalability are as well. However, when crafting policies and planning on a deployment try and keep a central theme in mind: these things are easy and fun to use and should stay that way. As organizations continue to pilot the iOS platform, it is often the traditional Mac OS X systems administrators that are tapped to manage these devices. The tools showcased in this article are a good start to keep sane when attempting to manage these devices en masse. We are entering into a new era and for many environments learning the new concepts and how to use these new tools is just the beginning. Good luck!



About The Authors

Charles Edge is the Director of Technology for 318 Inc, a national provider of IT Services with a focus on the Apple platform. Charles is also the author of a number of books on Mac Systems Administration, including the *Enterprise Mac Administrator's Guide* from Apress. You can reach him at cedge@318.com.

The members of the Enterprise Desktop Alliance are committed to making it easy to deploy, integrate and manage Macs in a Windows environment. The authors are technical experts within Centrify and Group Logic. info@enterprisedesktopalliance.com

Use the resources you already have to easily manage and secure

Macs in the Enterprise

The Designer

Needs her MacBook in order to work productively and cheerfully



The IT Director

Has to keep expenses and overhead in line while assuming responsibility for Macs



The CEO

Expects IT to support his Mac, which he uses along with his iPhone and iPad



They can all be happy

Everyone from the CEO to part-time contractors want to bring Macs into the workplace. But your Windows-centric IT department worries that they'll need additional hardware and training to efficiently manage and secure them.

With Centrify, you can use your existing Windows tools and infrastructure to centrally manage user accounts, control access across departments or geographies, and even use Group Policy to ensure compliance with password, screensaver lockout, file-sharing and other security measures.

Best of all, you can get started for free! With Centrify Express, in minutes you can have users logging into their Macs with their corporate Windows username and password.

 **Centrify**[®]



Get Started for FREE!

www.centrify.com/express

Centrify is a Proud Member of

Absolute
Software

 **Centrify**

 **ExtremeZIP**

 **Web Help Desk**

**Enterprise Desktop
ALLIANCE**

Binding with AppleScriptObjC

Connecting widgets through a key/value mechanism

by José R.C. Cruz

Introduction

The hallmark of any good application is an intuitive, well-designed user interface. The interface is the first visible construct users get to see. It is through the interface that users interact with the application, receive and supply data as well as directions.

So today, we will explore how a Cocoa application, built with AppleScriptObjC (or *ASOC*), connects itself with its user interface. We will study the bindings mechanism to shuttle data between the interface and the application process. We will learn some of the benefits of this mechanism, and some of its issues.

Next, we study how to bind two types of interface widgets to a Cocoa object. And we will modify an existing Cocoa project to use the bindings mechanism.

Readers should have a working knowledge of AppleScript and of the Xcode development tool. The project featured here is available from the MacTech ftp site at <ftp://ftp.mactech.com>.

Interacting with the Interface

In a typical Cocoa application are three distinct groups of classes (Figure 1). The first group, the *models*, holds the data being processed. These classes know how to store and manage said data. They define how the data is to be formatted and what protocol to use to convey it. Some model classes link the data to a given storage media or network.

In the second group of classes are the *views*. They present the data to the user in a readable form. They create graphical constructs that users use to manipulate the data and to direct the application process. Some even provide constructs into which users provide new data, either by typing or by selection.

The *controllers* form the third group of Cocoa classes. They are solely responsible for shuttling data between a

model and its view(s). Some ensure that any data received by a view are immediately sent to the right model. Some keep the views in synch with their respective models. And some exchange data and signals with other controllers, either within or without the main process.

It is, of course, possible for a Cocoa class to assume two roles. But such classes are rare and found mostly in third-party frameworks. Good code factoring always dictates that a class must have one role and must handle that role well.

The traditional way

Naturally, if a controller is to work correctly, it must know which view to link to which model. One way to establish these links is with the use of *outlets and actions*.

Outlets and actions have their origins in NeXTStep, precursor to the Foundation and Application kits that form the modern Cocoa framework. An outlet is an object through which data is either *sent* or *received*. It can be a model or a view, or even a controller. An action is a routine that *reacts* to a specific signal. That signal may come from a model, a view, or another controller.

In an ASOC script object, outlets and actions appear as *properties and handlers* (Listing 1). For a property to serve as an outlet, it gets a default setting of **missing value**. This setting does not declare a specific data type as AppleScript supports dynamic typing. For a handler to serve as an action, its name ends with an *underscore* and it gets a *single input argument*. The argument refers to the object that invoked the given action. Here too the argument does not specify a data type. It is up to the handler code to identify the calling object.

Listing 1. A sample AppleScriptObjC script object.

```
script WeightsAppDelegate
```



The idea: Turn surfboards into art

Serena Mitnik-Miller and Mason St. Peter of custom surfboard collective Two Birds Fly are living proof that when you're passionate about an idea, and you free it, beautiful things happen. Whether they're managing orders or creating promotional materials, working in a trusted productivity suite helps them take care of business and make sure their big idea takes flight.

Free the ideas.



Introducing **Microsoft® Office:mac²⁰¹¹**

Transcend platforms and free your ideas
with Microsoft® Office for Mac 2011.

Learn more at officeformac.com/freetheideas

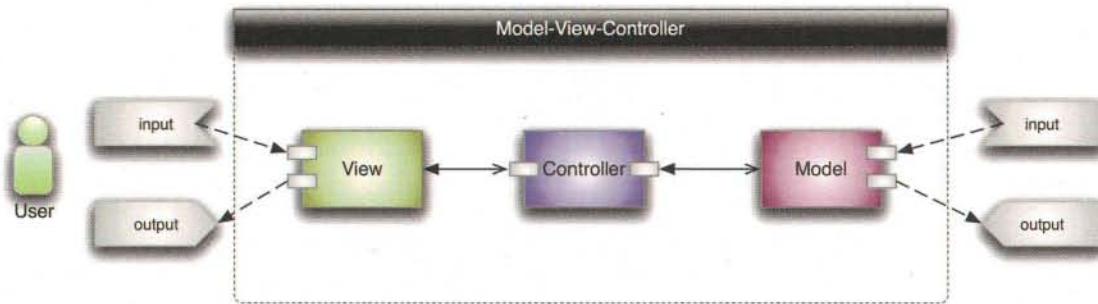


Figure 1. The model-view-controller structure.

```

— BASE PROPERTIES
property parent : class "NSObject"

— OUTLET PROPERTIES
property oSrcVal : missing value
property oSrcUnt : missing value
property oCnvVal : missing value
property oCnvUnt : missing value

— ACTION HANDLERS
on doConvert_(aSrc)
    local tVal, tUnt, tNew, tCnv
        — read the entered weight value
        set tVal to floatValue() of oSrcVal as real
        set tOld to indexOfSelectedItem() of oSrcUnt as
integer
        — read the chosen weight unit
        set tNew to indexOfSelectedItem() of oCnvUnt as
integer
        — perform the conversion
        set tCnv to convertWeight ~
            given weight:tVal, oldUnit:tOld, newUnit:tNew
        — display the conversion result
        tell oCnvVal to setFloatValue_(tCnv as real)
end doConvert_
    — truncated for length...

end script

```

Figure 2 shows how the above outlets and actions are linked to a user interface, which is a window. On the window are two text fields and two pop-up menus. These are the views. The text fields are mapped to the outlets `oSrcVal` and `oCnvVal`, the pop-up menus to `oSrcUnt` and `oCnvUnt`. Their values can then be read or changed through their assigned outlets.

Next, the first text field and the two pop-up menus are mapped to the action `doConvert_()`. When users enter new values into the field or select an item from the menu, the widgets react by invoking `doConvert_()` from the `WeightsAppDelegate` object.

Outlets and actions are easy to implement and debug. They are easy to learn, thanks largely to their graphical nature. On the other hand, outlets and actions can be quite tedious to implement, especially on interfaces with complex layouts. Moreover, they are harder to change at runtime.

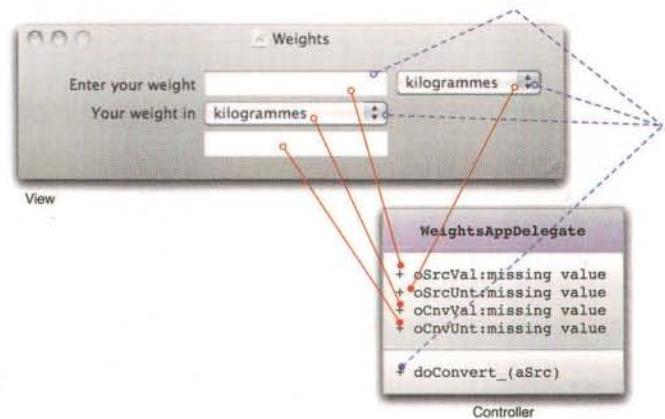


Figure 2. Linking outlets and actions.

The way of bindings

Another way to link a controller to its views and model is through *bindings*. The bindings mechanism first appeared in version 10.3 of Mac OS X. It uses *key/value pairs* to map each view to each model. Furthermore, it uses predefined controllers to manage the data flow itself.

Bindings work well with most interfaces, be they simple windows or complex forms. They can be defined either at build or at runtime. They can be altered at runtime to suit changing conditions. They even reduce the amount of code needed to link with each view or model.

On the other hand, bindings are much harder to implement and debug. They are not supported by some third-party Cocoa classes and by classes that have to pass through code bridges.

The Predefined Controllers

At the time of writing, there are four predefined controllers in the Cocoa framework. Each one is designed to work with a specific model type. Some are optimized for a specific view. All four, however, support the bindings mechanism and show the same general behavior.

The object controller

The `NSObjectController` (Figure 3) is the base class of all but one of the predefined controllers. It uses an instance of `NSMutableDictionary` as its default data model. But it

Start a Web Site Today!

from only **\$4.95** /month

Get first month for a penny!

Coupon code: **MACTECH**



Powered by 130% Texas Wind Energy!

100% Mac-compatible Web Hosting



- 99.9% Uptime
- 45-day Money Back Guarantee
- Over 4,500 Free Web Design Templates
- Free Site Builder Software
- In-house Support Available 24x7x365

Sign up at www.HostGator.com/mactech
and get the first month for just a penny!

Already have a web site?
We'll transfer it for **free!**

www.HostGator.com

866.96.GATOR

can use other model types passed through its modifier `setObjectClass:`.

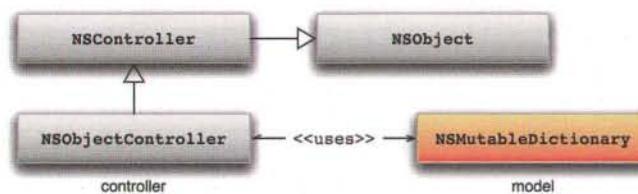


Figure 3. The `NSObjectController` class.

This controller class is built upon two other Cocoa classes. The superclass `NSObject` provides services common to all Cocoa classes. It links the controller to the ObjC runtime engine and it defines the basic behavior of an ObjC object. The parent class `NSController` defines the two protocols common to all controller objects: `NSEditor` and `NSEditorRegistration`.

The `NSObjectController` class is best suited for views that work with a fixed data set. But for repeating and hierarchical sets, other controllers are available.

The array controller

The `NSArrayController` (Figure 4) uses an `NSMutableArray` as its data model. It derives from `NSObjectController`, inheriting the latter's properties and methods. Plus, it has hooks for models that can filter or reorder its data store.

The controller works best with interfaces that use the `NSTableView` class. That view can render data as a series of rows and columns. Users can examine large data sets one page at a time or they can open a row of data into a separate window for editing.

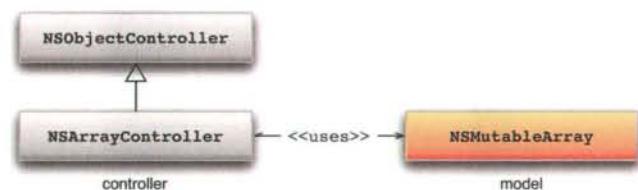


Figure 4. The `NSArrayController` class.

The tree controller

The `NSTreeController` (Figure 5) also uses the same `NSObjectController` as its parent class. Its data model is a tree object, which can be an instance of `NSMutableDictionary` or it can be a custom object. Tree objects hold their data as a collection of *branches* and *leaves*. A branch links three or more data items together, while a leaf links

only two. All branches then converge to a single data item known as a *root*.

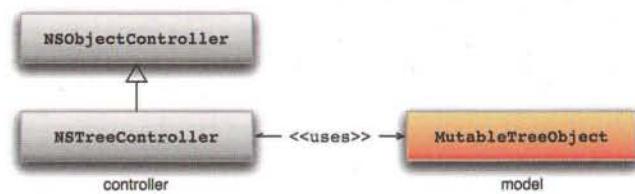


Figure 5. The `NSTreeController` class.

This controller is meant for interfaces that use either the `NSBrowser` or `NSOutlineView` widgets. These view widgets present tree data in a top-down, hierarchical order. Users can drill down from the root or a specific branch, or they can isolate those branches that have a specific item.

The user-defaults controller

The `NSUserDefaultsController` class (Figure 6) does not derive from `NSObjectController`. But it shares the *same* parent and root classes as its sibling. The data model of this controller is an instance of `NSUserDefaults`. It allows the controller use the defaults mechanism to store the user's preferences for the current process session. The preferences are written to a plist file, which may reside in the user's home directory or in a publicly shared one.

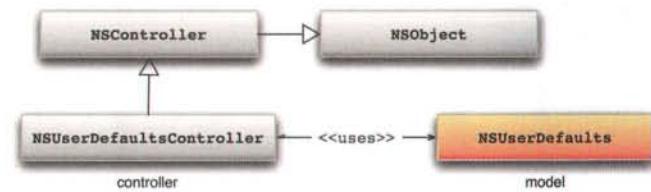
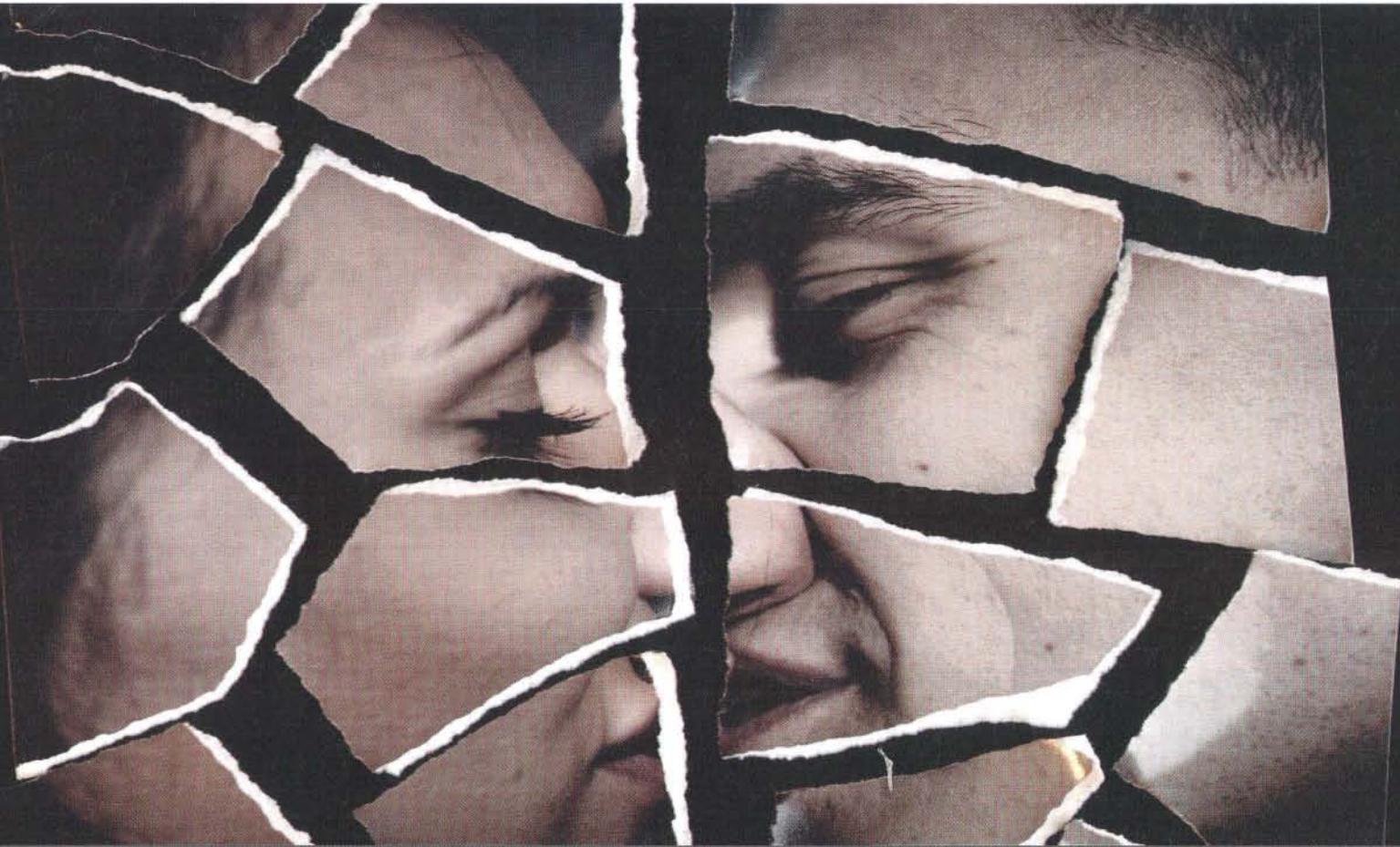


Figure 6. The `NSUserDefaultsController` class.

The managed-object-content controller

Yet, there is one controller not found in the standard Application Kit framework. This is the **managed-object-content controller** (Figure 7), which uses `NSManagedObject` and `NSFetchRequest` as its data models. With these models, the controller gains access to the Core Data layer. It can perform queries and other database-related tasks. It can even work with most SQL databases using the SQLite code engine.

SHATTERED MEMORIES?



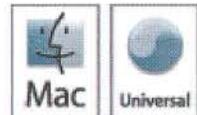
WE CAN HELP
Recover Your Lost Files Now!

We Provide Data Recovery Software And Services For All Types Of Media



www.LC-Tech.com/mt

A GLOBAL LEADER IN DATA RECOVERY



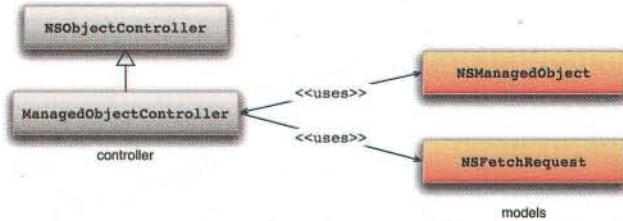


Figure 7. The managed-object-content controller class.

In order to use this controller, we will have to build it from scratch. This topic, as well as CoreData, will be covered in a future MacTech article.

Preparing to Bind

When we last built the Weights demo project, we used outlets and actions to link its view widgets to its controller **WeightsAppDelegate**. Now we will refactor this same project and use bindings to link its widgets. Our chosen controller will be the **NSObjectController** class.

Defining the model

Start by choosing **New File** from Xcode's **File** menu. From the ensuing assistant dialog, select the template **AppleScript class file**. Click the **Next** button and set the file name to **WeightsConvert**. Leave the file location at its default

setting. Then click the **Finish** button to create the file and add it to the project.

Listing 2 shows part of the code for the **WeightsConvert** script object. This object uses the property **bindDict** to hold an instance of **NSMutableDictionary**. Its **initialize()** handler stores *three* key/value pairs into **bindDict**. Then the **convertWeight()** handler reads those same three key/value pairs and uses their values to compute the new weight value. Not shown are the four instance handlers that do the actual computations.

Listing 2. The model class

```

WeightsModel
script WeightsConvert
    — BASE PROPERTIES
    property parent : class "NSObject"
    — INSTANCE PROPERTIES
    property bindDict : class "NSMutableArray"
    — INHERITED HANDLERS
    to initialize()
        local tKeys, tVal
        try
            — prepare the initial key/value data
            set tKeys to {"srcValu", "srcUnit", "cnvUnit"}
            set tVal to {0, 0, 2}
        end try
        — initialize the property instance
        tell class "NSMutableDictionary" of the current
        application
            set bindDict to
            dictionaryWithObjects_forKeys_(tVal, tKeys)
        end tell

```

100% Hassle-Free Firm Quote

\$10 bonus per quote - referral code "mactech7"



We buy iPhones, iPads, & Macs
Get paid after your product is
received and tested! Guaranteed!

www.SellYourMac.com

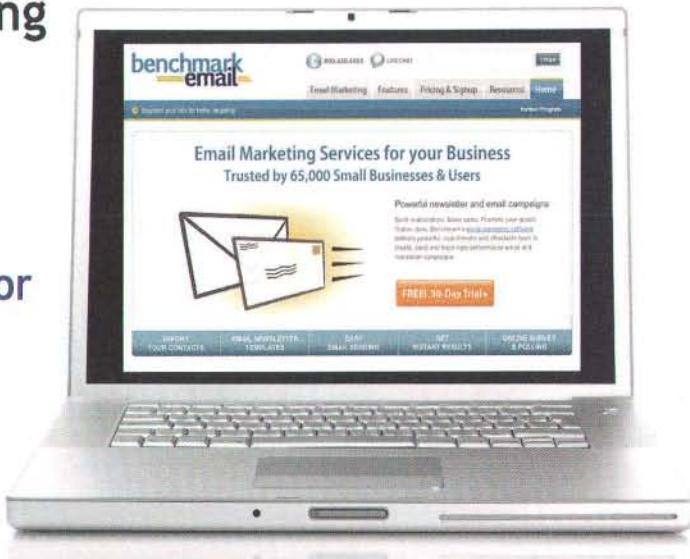


Customer service and satisfaction #1 priority

An Awesome Email Marketing Tool for **MACTECH READERS**

Benchmark Email is the standard in permission-based email marketing

- ✓ List Management
- ✓ Free Newsletter Archive
- ✓ Easy to Use Drag-n-Drop Email Editor
- ✓ Powerful Personalization
- ✓ Image Gallery
- ✓ Visual Graphs for Open & Clickthrough Tracking
- ✓ Spam & Spell Checkers
- ✓ Creative & Compelling HTML Templates
- ✓ Upload Your own Template
- ✓ Easy Video Integration



MACTECH users
get a 10%
Lifetime Discount
with this promo code
123923

Most email marketing services charge more money for less product. Not us. Benchmark Email's sophisticated suite of email marketing features lets you grow your list, send campaigns, track your data and even take online polls for an affordable price.

Plans starting at only \$9.99 per month

Sign up for a FREE 30 Day Trial Today!

www.BenchmarkEmail.com

```

on error eMsg number eNum
local tErr

set tErr to "WeightsConvert:initialize:error:" &
eMsg
log tErr
end try
end initialize

— Main dispatch routine
to convertWeight()
local tSrc, tCnv, tSru, tCnu

— initialize the following locals
set tSrc to valueForKey_("srcValu") of bindDict as
real
set tSru to valueForKey_("srcUnit") of bindDict as
integer
set tCnu to valueForKey_("cnvUnit") of bindDict as
integer

— identify the original weight unit
if (tSru = 0) then
    — weight:unit:kilogrammes
    set tCnv to convertKilogrammes for tSrc into tCnu
else if (tSru = 1) then
    — weight:unit:grammes
    set tCnv to convertGrammes for tSrc into tCnu
else if (tSru = 2) then
    — weight:unit:pounds
    set tCnv to convertPounds for tSrc into tCnu
else if (tSru = 3) then
    — weight:unit:stones
    set tCnv to convertStones for tSrc into tCnu
else
    set tCnv to aVal
end if —(tSru = 0)

```

```

— return the conversion result
return (tCnv)
end convertWeight

—
— conversion handlers go here...
—
end script

```

In essence, the **WeightsConvert** model carries those conversion routines that used to be in the script object **WeightsAppDelegate**. This frees the latter to focus on just tasks delegated by the main application process.

Defining the controller

Locate the **MainMenu.xib** entry from the Groups and Files pane of the Xcode window. Double-click the entry to load the bundle into Interface Builder. Within Interface Builder, locate the entry **Object Controller** from the library palette. Drag its icon onto the **MainMenu.xib** window—leave its name as is. These actions add an instance of **NSObjectController**.

Now locate the entry **Object** from the library palette. Again, drag its icon onto the **MainMenu.xib** window. Change the icon's name to **WeightsConvert**. Go to the **File** menu and choose the menu **Read Class Files...**. Use the Open File dialog to select and load the project file **WeightsConvert.applescript**. Interface Builder will display a warning dialog, telling us that the file does not have any valid ObjC classes. Ignore it and dismiss the dialog.

Interference?

We automatically steer Wi-Fi signals around it.

You'd be surprised at the things that screw up wireless. When trying to stream anything over Wi-Fi, bluetooth devices, thick walls, microwave ovens, cordless phones, neighbor networks, and even big "boned" mammals are all a pain in the rumpus. But we can deal with them all. Our patented Smart Wi-Fi technology constantly forms and steers Wi-Fi signals over the fastest and cleanest paths — while rejecting interference. This gives you longer range and more reliable throughput you can count on. **Simply better connections**. See for yourself at www.ruckuswireless.com.

ZoneFlex 7363 Series
Dual-Band 802.11n
Access Point



MACTECH[®]

BOOTCAMP 2011

When and Where? MacTech Boot Camp, for those that support home users, small office, and small to medium sized businesses, is taking place around the country. The one-day, session-packed event will cover topics throughout the day. Lunch is included giving attendees the opportunity to not only learn from the best, but to also get to know others in the industry.

San Francisco, January 26	SOLD OUT
Dallas, April 27	SOLD OUT
Boston, May 18	SOLD OUT
Los Angeles, July 27	Registration Open
Chicago, August 31	Registration Open

One Track. Where MacTech Conference is for IT Pros and those supporting larger organizations, MacTech Boot Camp focuses on the needs of techs supporting consumer and small business markets. MacTech Boot Camp has a single track of sessions targeting what consultants and techs need to know to support home users, SOHO, and SMB. Sessions focus on both desktop and mobile, with appropriate levels of attention paid to the Mac, iPhone, iPad and iPod.

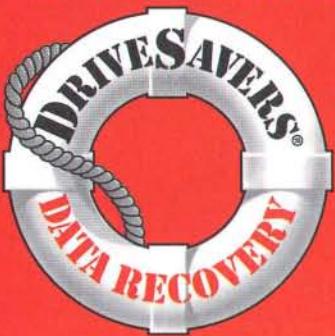
Full Array of Topics. Topics include: Marketing Oneself in a Community • Client Handling, Documentation, Passwords • Resources for Answers • Troubleshooting Hardware • Networking Basics and Troubleshooting • Printing Setup and Troubleshooting (Wifi, USB, Bluetooth, and Wired) • iOS Support • Windows on the Mac Options • Software Updates • Backup Systems and Options • Viruses and Security • Basic Scripting • Support Call Techniques • Remote Support and Access.

Lunch Included. Spend with peers you know and make new contacts.

Space is Limited. We have a limited number of event attendee spots available. Don't miss out.

Subscribers Get Special Pricing. While early bird pricing is available to start, current MacTech subscribers can take advantage of discounts during an extended window. *But act fast! Even for subscribers, it ends soon.*

Lost Data?



We can save it!

Fast • Reliable • Certified
Secure • Data Recovery

800.440.1904

www.drivesavers.com

©2010 DriveSavers Data Recovery Inc.

Wish iCal were a Database?

Zulu iCal Server for FileMaker

Read / write to FileMaker live from iCal.
No synching, no scripting. Seamless.

www.seedcode.com/zulu

Select the **WeightsConvert** icon and choose **Identify Inspector** from the Tools menu. From the pop-up menu labeled **Class**, select **WeightsConvert**. These steps add an instance of **WeightsConvert** to the **MainMenu.xib** bundle. Save your changes at this point.

Now select the **Object Controller** icon on the **MainMenu.xib** window. Choose **Bindings Inspector** from the Tools menu. Drag a line from the **content** outlet to the **WeightsConvert** icon (Figure 8). This makes **WeightsConvert** as the model for our object controller.

Again, save your changes.

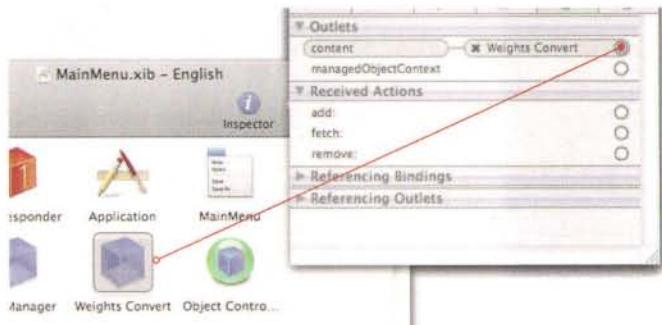


Figure 8. Linking the controller to its model.

Binding The Controls

Most views fall under one of two groups. In the **control group** are views that interact with users by either clicks or selections. Some views such as the **NSPopUpButton** present users with a restricted choice of inputs. Others such as **NSMenuItem** allow users to start or direct a specific process. Signal flow is often *unidirectional*, going from view to controller.

The window of our Weights project has two **Pop Up Button** widgets. Both are control views and both are instances of **NSPopUpButton**. We will see how these views are bounded to the object controller.

To bind the view

The active session should be Interface Builder. Select the top **Pop Up Button** widget and choose **Bindings Inspector** from the Tools menu. On the inspector palette, locate the entry labeled **Selected Index**. Click its disclosure icon to view the binding settings.

Now click to set the checkbox labeled **Bind to:**. From the adjacent pop-up menu, choose the entry **Object Controller**. On the first combo field, **Controller Key**, enter the value '**selection**'. On the next combo field, **Model Key Path**, enter '**bindDict.srcUnit**'. Leave the rest of the settings as is and save your changes. The palette should match the one in Figure 9.

Select the bottom Pop Up Button widget. Repeat the above steps, but set its Model Key Path to 'bindDict.cnvUnit'. Again, save your changes.

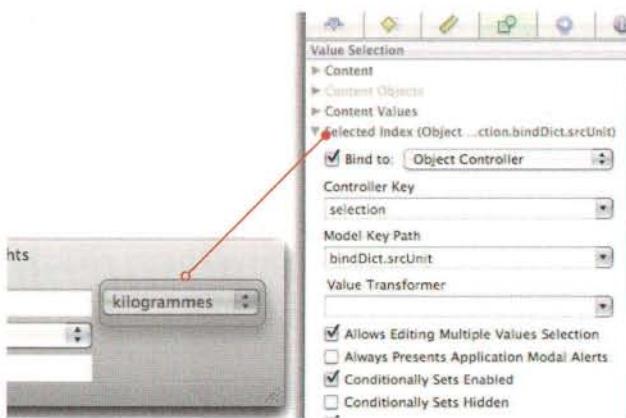


Figure 9. Binding the Pop Up Button.

What we just did is tell the object controller to monitor the states of the two widgets. If a user selects a menu item from either widget, the controller will read the selected index. It relays the index to `WeighsConvert`, which then stores the index into its `bindDict` property.

Binding The Fields

In the **field group** are views that present data as human-readable text. Some views such as `NSTextField` let users to enter or edit text through typing. Some such as `NSComboBox` come with a pop-up menu wherein users can choose preset text values. And some such as `NSTextView` accept multiple text-related data like font styles and colors.

Our Weights project uses two Text Field widgets on its main window. Both widgets are field views and both are instances of `NSTextField`. The top widget lets users enter or change numeric text. But the bottom widget, being disabled, does not.

To bind the view

The active tool session should still be Interface Builder. Select the top Text Field widget and choose **Bindings Inspector** from the Tools menu. Locate the entry labeled **Value** and click its disclosure icon. Again, set the checkbox **Bind to:** and choose **Object Controller** from the adjacent pop-up menu. In the **Controller Key** field, enter the value '`selection`'. Then in the **Model Key Path** field, enter '`bindDict.srcValu`' (Figure 10). Save your changes when done.

Next, select the bottom Text Field widget. Repeat the above steps, but set the **Model Key Path** field to '`convertWeight`'. Again, save your changes.

FontAgent Pro

Professional Font Management



Designed for IT Managers and Creative Pros

"FontAgent® Pro is the premier font manager for creative Mac users, giving them the power and simplicity to get projects done fast and right. It's the right technical solution as well. The new FontAgent Pro™ TeamServer™ is perfect for small workgroups, and the Enterprise Server provides slick directory integration and unrivaled scalability."

"As integrators and consultants, we have been recommending FontAgent Pro to our clients for the last seven years because it delivers unparalleled functionality at a competitive price backed by great, friendly service. You can't ask for more than that."

*Joe Schram and Jim Hollis
Sparktivity
Raleigh, North Carolina*



800-866-8778 +1-408-871-9933
www.insidersoftware.com

© 2010-2011 Insider Software Inc. All rights reserved. FontAgent is a registered trademark and FontAgent Pro, TeamServer and the Insider logo are trademarks of Insider.



FMC
ONLINE • ONSITE • IN CLASS

CLASSES NOW BOOKING
iOS Development Courses

Extensive Training For Writing Publishing & Selling Apps

- Programming in Objective-C 2.0
- iOS Applications Development with the SDK 4.0
- iOS App Development Master Class



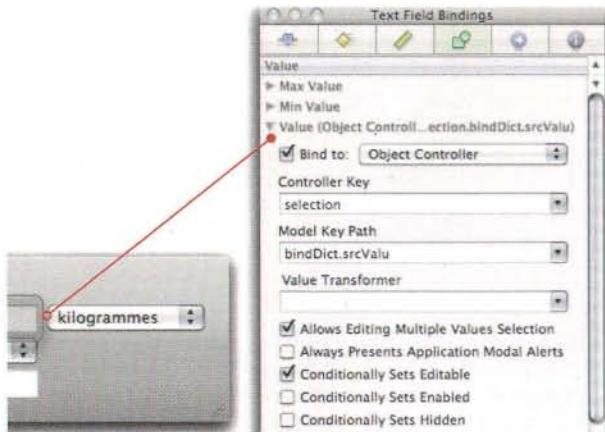


Figure 10. Binding the Text Field widget.

Two things will now happen. When a user enters a number value to the top widget, the object controller sends that value to `WeightsConvert`. `WeightsConvert` then stores the value into its `bindDict` property. But the bottom widget is not bound to the same `bindDict` property as the top. Instead, it is bound to the `convertWeight()` handler. Thus, that widget will invoke said handler and display the latter's result.

First run

Switch back to Xcode and choose **Clean All Targets** from its **Build** menu. This should remove the old build files from the

project. Now, choose **Build and Run** from the same menu. Xcode will now recompile the project and launch the resulting `Weights` binary.

Once `Weights` becomes active, it will display a single window. The top field and the two pop-up menus will show the default values held by the `bindDict` property. And the bottom field will show the conversion results based on those values.

Yet, if we provide a different value to the top field, the result from the bottom field remains unchanged. The same also happens when we choose a different unit from any of the two pop-up menus. This means `Weights` does not respond to changes in input.

Reacting To Change

For the `WeightsConvert` model to react to changes in its key/value data, it must register which keys are dependent and which ones are not. If the model were written in ObjC, it can register dependency using lightweight method `setKeys:triggerChangeNotificationForDependentKey:`.

Consider the sample code in Listing 3. Here, `WeightsConvert` tells the object controller that changes to keys `srcValu`, `srcUnit` and `cnvUnit` should cause a change to key `convertWeight`. Since `convertWeight` points to a routine, changes to any of the three keys will invoke the routine.

iDeveloper
iDTV

start creating great apps

iDeveloper TV is focused on producing high quality podcasts, screencasts and video training to help you become a Mac or iPhone/iPad developer as quickly as possible. All our products are sold DRM free so you can take them with you on your Mac, iPhone and iPad to watch and learn anytime.

Also all video courses come with the iDTV 100% Satisfaction Guarantee



iDeveloper.tv



Listing 3. Registering the dependent key.

```

- (void) initialize
{
    NSArray *tKeys;
    // prepare the property(ies)...
    //
    tKeys = [NSArray arrayWithObjects:@"srcValu", @"srcUnit"
        , @"cnvUnit", nil];
    [self setKeys:tKeys

triggerChangeNotificationsForDependentKey:@"convertWeight"];
}

```

Yet, the above method does not appear to work with the AppleScriptObjC bridge. It is possible that the bridge does not yet support this call. To work around this shortcoming, we fall back to that old reliable: *the action handler*.

Preparing the model

Go to the `WeightsConvert` script class on the Xcode project window. Modify its `convertWeight` handler as shown in Listing 4. The handler is now an action handler, its argument `aSrc` pointing to the calling widget. As usual, it reads the key/value data from the `bindDict` property and invokes the required conversion handlers. But, instead of returning the conversion result, this action handler stores the result to the `bindDict` property under the key '`cnvValu`'.

Listing 4. The action handler.

```

convertWeight_(O
    to convertWeight_(aSrc)
        local tSrc, tCnv, tSrc, tCnv
        — initialize the following locals
        set tSrc to valueForKey_("srcValu") of bindDict as
real
        set tSrc to valueForKey_("srcUnit") of bindDict as
integer
        set tCnv to valueForKey_("cnvUnit") of bindDict as
integer
        — identify the original weight unit
        — see the project for the complete code
        — return the conversion result
        tell bindDict to setValue_forKey_(tCnv, "cnvValu")
end convertWeight_

```

Next, modify the `initialize` handler as shown in Listing 5. The handler now stores *four* key/value pairs to the `bindDict` property. Save your changes when done.

Listing 5. The modified handler.

```

initialize()
    to initialize()
        local tKeys, tVal
        try
            — prepare the initial key/value data
            set tKeys to {"srcValu", "srcUnit", "cnvUnit",
"cnvValu"}
            set tVal to {1, 0, 2, 0}
            on error eMsg number eNum

```

Introducing a better hosting solution.

- ✓ Running CloudLinux
- ✓ Limited Accounts Per Server
- ✓ Full cPanel With Each Account
- ✓ Daily Backups
- ✓ Free Domain and Wildcard SSL



Discounts on our UBB Forum



- ▶ In use since 1997
- ▶ Easy to setup
- ▶ Easy to administer
- ▶ Built in PhotoGallery

As seen on the MacTech Forums
at applecentral.com

Visit www.mindraven.com and let us show you how we can give your website a better home with our shared hosting plans, semi-dedicated and dedicated servers.

MINDRAVEN.com

```

local tErr
set tErr to "WeightsConvert:initialize:error:" &
eMsg
log tErr
end try
end initialize

```

Linking the action

Switch to Interface Builder and select the bottom **Text Field** widget on the window layout. Then choose **Bindings Inspector** from the **Tools** menu. Change the **Model Key Path** field to '**bindDict.cnvValue**'. The object controller will now update this widget with data held by the '**cnvValue**' key of the **bindDict** property.

Next, select the **WeightsConvert** icon on the **MainMenu.xib** window. Choose **Connections Inspector** from the **Tools** menu. The inspector palette should show **convertWeight** as one of the actions. Drag a line from **convertWeight** to the top **Text Field** widget. Do the same for the two **Pop Up Button** widgets. Save your changes and switch back to Xcode.

Second run

Recompile the Weights project by choosing **Build and Run** from the **Run** menu. As before, Xcode launches the Weights binary after building it, and Weights displays its sole window.

Click on the second **Pop Up Button** widget and choose the menu item **grammes**. With the original weight value being **1** and its unit being **kilogramme**, Weights should display the value **1000** on the second **Text Field** widget. Try changing the other input values. Weights should still react to each change with the right conversion result.

Concluding Remarks

Bindings are another way to link application code objects with the user interface and with each other. They use key/value pairs to identify the links and predefined controllers to manage the links. Bindings help reduce the amount of coding needed and they help refactor the application code into distinct, manageable pieces.

This article showed us how bindings can work with an AppleScriptObjC script object. We learned how to modify an existing ASOC project and how to assign key/value pairs to its interface widget. We learned how to bind an object controller to the user interface. We even learned how to work around a binding shortcoming.

So ends today's coverage of AppleScriptObjC. Come back next time as we explore other relevant topics like data sourcing, browsing, input/output streams, and so on.

Until then, I bid you good day.

Bibliography and References

Apple Developer Connection. *AppleScriptObjC Release Notes*.

Apple Inc. Internet:

<http://developer.apple.com/library/mac/#releasenotes/Scripting/Automation/RN-AppleScriptObjC/index.html>, 2009 May 27. [2010 Aug].

Apple Developer Connection. "Cocoa Bindings Programming Topics". *MacOS X Reference Library* [Online]. Apple Inc. Available:

<http://developer.apple.com/library/mac/#documentation/Cocoa/Conceptual/CocoaBindings/CocoaBindings.html>, 2009 March 08. [2010 Dec].

Scott Stevenson. *Introduction to Cocoa Bindings*.

CocoaDevCentral.com. Internet:

<http://cocoadevcentral.com/articles/000080.php>. 2004 [2010 Dec].



About The Author

JC is a freelance engineering writer from North Vancouver, British Columbia. He frequently contributes articles to MacTech and REALbasic Developer. He also wrote for the now defunct Python Magazine, and is now working on a database e-Book. When away from the writing pile, JC spends quality time with his charming foster nephew. He can be reached at anarakisware-at-gmail-dot-com.

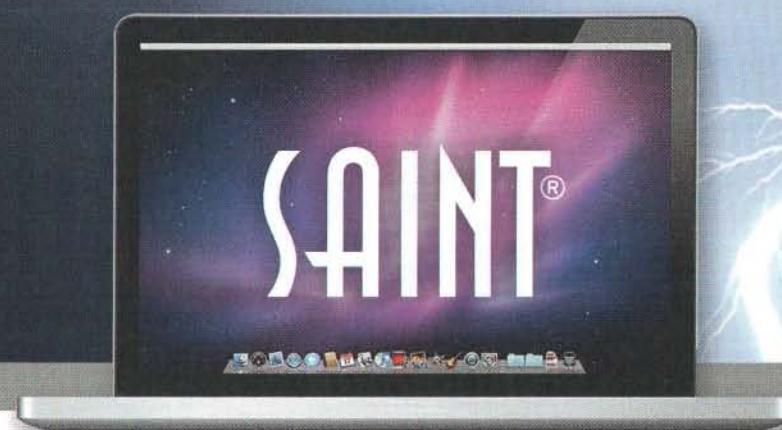


Create Outstanding Apps That
Interface To Everything Musical

www.iConnectMIDI.com

SAINT® for Mac OS X

Integrated Vulnerability Scanning, Penetration Testing,
and Checklist (Benchmark) Compliance.



Vulnerability Scanning

Assess any target with an IPv4, IPv6, or URL with pre-defined policies for PCI, HIPAA, FISMA, and more.

Identify CVE, OSVDB, IAVA, OVAL, and more.



Penetration Testing

Exploit vulnerabilities to gain remote access.

Run social engineering, phishing assessments, and more with the exploit tools suite.



Checklist Compliance

Show compliance with FDCC & USGCB security configuration policies defined by NIST SP 800-70.



For more information—

www.saintcorporation.com/mac
1-800-596-2006

SAINT is SCAP validated by NIST & is a PCI approved scanning vendor (ASV).

Examining 3 Important Nmap Scans with Wireshark

Using Wireshark to explain Nmap traffic

by Mihalis & Dimitris Tsoukalos

Introduction

In this article, you will learn how to interpret the traffic created by three popular Nmap scans—the TCP SYN scan, the Ping Scan and the UDP scan—using the Wireshark network traffic analyzer. The required TCP/IP theory is also included.

WireShark and Nmap were running on the same machine, an iMac, which makes the capturing process easier. You must remember, though, that WireShark can also analyze pre-captured traffic from many different sources and formats.

The TCP HandShake

IP protocol provides **unreliable** packet delivery to each packet's destination IP address. Unreliable means that packets may not reach their destination because of transmission errors, network hardware failures, or when networks become congested and cannot accommodate the load presented. Networks may deliver packets out of order, deliver them after a substantial delay, or deliver duplicates.

TCP provides a connection oriented, reliable, byte stream service. It is a full duplex protocol, meaning that each TCP connection supports a pair of byte streams, one flowing in each direction. The term connection oriented means the two applications using TCP must establish a TCP connection with each other before exchanging any data.

TCP assigns a sequence number to each byte transmitted, and expects a positive acknowledgment (ACK) from the receiving TCP stack. If the ACK is not received within a timeout interval, the data is retransmitted as the original packet is considered undelivered. The receiving TCP stack uses the sequence numbers to rearrange the segments when they arrive out of order, and to eliminate duplicate segments.

TCP header includes Source Port and Destination Port fields. These two fields plus the source and destination IP addresses are combined to uniquely identify each TCP connection. Ports help TCP/IP stacks in network connected devices (PCs, routers etc.) to distribute traffic among multiple programs executing on a single device.

A TCP header also includes a 6-bit flags field that is used to relay control information between TCP peers. The possible flags include SYN, FIN, RESET, PUSH, URG, and ACK. SYN and ACK flags are used for the initial TCP 3-way handshake. The RESET flag signifies that the receiver wants to abort the connection.

In Figure 1 we can see the 3-way handshake packet exchange. Initially, Client sends a TCP SYN packet to Server. TCP header also includes a Sequence number field that has an arbitrary value in the SYN packet.

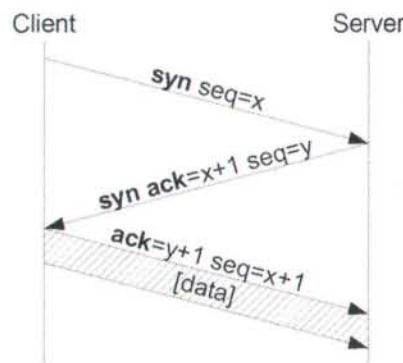


Figure 1: The TCP Handshake

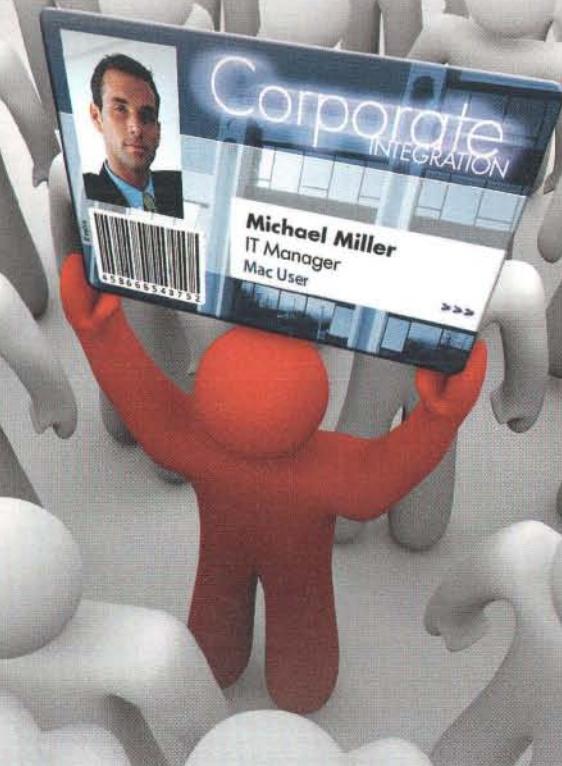
Server sends back a TCP [SYN, ACK] packet that includes the Sequence number of the opposite direction and an acknowledgement of the previous Sequence number.

Finally, in order to truly establish the TCP connection, Client sends a TCP ACK packet in order to acknowledge the Sequence number of Server.

The ICMP Protocol

To allow routers in a network to report errors or provide information about unexpected circumstances, a special purpose message mechanism is included in TCP/IP protocol. Like all

Don't get Lost in the Crowd...



...let an Evolis card printer Identify you!

Fully compatible with Mac[®], the Pebble⁴ ID card printer is the perfect solution to print all your ID cards in high-resolution. Whether you need Employee ID's, Student ID's or Loyalty cards, the Pebble ID card printer will help you stand out from the crowd.

Call TransTech Systems today

1-888-843-3643

to get connected with your
local Evolis partner!



Pebble⁴
Color Single-sided
card printer



TransTech is an Official Evolis Solutions Provider

Tel: 1.888.843.3643 • Fax: 503.682.0166 • email: sales@ttsys.com • www.ttsys.com

Mac is a registered trademark of Apple Inc.

evolis
OFFICIAL PARTNER

other traffic, ICMP messages travel across a network in the data portion of IP packets. The ultimate destination of an ICMP message is not an application program or a user on the destination device but the Internet Protocol software on that device. That is, when an ICMP error message arrives, the ICMP software module handles it. Of course, if ICMP determines that a particular higher-level protocol or application program has caused a problem, it will inform the appropriate software module.

The TCP/IP protocol provides facilities to help network managers or users identify network problems. One of the most frequently used debugging tools, **ping**, invokes the ICMP echo request and echo reply messages. A host or router sends an ICMP echo request message to a specified destination. Any machine that receives an echo request formulates an echo reply and returns it to the original sender. The request contains an optional data area; the reply contains a copy of the data sent in the request. The echo request and associated reply can be used to test whether a destination is reachable and responding. Because both the request and reply travel in IP packets, successful receipt of a reply verifies that major pieces of the network work. First, IP software on the source computer must route the packet. Second, intermediate routers between the source and destination must be operating and must route the packet correctly. Third, the destination device must be running (at least it must respond to interrupts), and both ICMP and IP software must be working. Finally, all routers along the return path must have correct routes.

THE UDP Protocol

UDP uses the underlying IP protocol to transport a message from one machine to another, and provides the same unreliable, connectionless packet delivery as IP. It does not use acknowledgements to make sure messages arrive, it does not order incoming messages, and it does not provide feedback to

control the rate at which information flows between the machines. Thus, UDP messages can be lost, duplicated, or arrive out of order. Furthermore, packets can arrive faster than the recipient can process them. It **only** adds the ability to distinguish among multiple destinations within a given device that uses source and destination ports fields in the UDP header.

Common network applications that use UDP include the Domain Name System (DNS), Trivial File Transfer Protocol (TFTP), real time streaming media applications such as IPTV, Voice over IP (VoIP), and many online games.

The TCP SYN Scan Traffic

For the purposes of this article part, a TCP SYN scan was run against a single network device. The output of the Nmap command (using administrator privileges) is the following:

```
Monastery:Downloads mtsouk$ sudo nmap -sS 192.168.1.1
```

```
Starting Nmap 5.21 ( http://nmap.org ) at 2010-12-29 16:56
EET
Nmap scan report for 192.168.1.1
Host is up (0.0038s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
80/tcp    open  http
8081/tcp  open  blackice-icecap
8085/tcp  open  unknown
MAC Address: 00:1D:19:8C:EB:27 (Arcadyan Technology)
```

```
Nmap done: 1 IP address (1 host up) scanned in 0.30 seconds
```

The TCP SYN scan is a very popular scan as it shows the open TCP ports. For each port a service is presented. The key point here is to remember that the presented service has not been tested and therefore you should not consider it 100% trustworthy.

The Nmap output shows that the 192.168.1.1 device (that is an ADSL router) has three TCP ports open: 80, 8081 and 8085.

So, we will start our Wireshark analysis with the packets that Nmap exchanges with the target host (192.168.1.1) while

nmap-sS.pcap - Wireshark						
No.	Time	Source	Destination	Protocol	Info	
57	14.807755	192.168.1.1	192.168.1.10	ICMP	Destination unreachable (Network unreachable)	
58	17.807825	192.168.1.10	192.168.1.1	TCP	47295 > sunrpc [SYN] Seq=0 Win=1024 Len=0 MSS=1460	
59	17.807844	192.168.1.10	192.168.1.1	TCP	47295 > rtsp [SYN] Seq=0 Win=2048 Len=0 MSS=1460	
60	17.807856	192.168.1.10	192.168.1.1	TCP	47295 > telnet [SYN] Seq=0 Win=1024 Len=0 MSS=1460	
61	17.807868	192.168.1.10	192.168.1.1	TCP	47295 > imap [SYN] Seq=0 Win=3072 Len=0 MSS=1460	
62	17.807879	192.168.1.10	192.168.1.1	TCP	47295 > netbios-ssn [SYN] Seq=0 Win=4096 Len=0 MSS=1460	
63	17.807892	192.168.1.10	192.168.1.1	TCP	47295 > https [SYN] Seq=0 Win=1024 Len=0 MSS=1460	
64	17.807903	192.168.1.10	192.168.1.1	TCP	47295 > microsoft-ds [SYN] Seq=0 Win=3072 Len=0 MSS=1460	
65	17.807914	192.168.1.10	192.168.1.1	TCP	47295 > ddi-tcp-1 [SYN] Seq=0 Win=2048 Len=0 MSS=1460	
66	17.807925	192.168.1.10	192.168.1.1	TCP	47295 > http [SYN] Seq=0 Win=3072 Len=0 MSS=1460	
67	17.807936	192.168.1.10	192.168.1.1	TCP	47295 > ftp [SYN] Seq=0 Win=3072 Len=0 MSS=1460	

Figure 2: TCP SYN scan packets with Wireshark

```
if (you_have_a_website == true) {  
  
    measure_roi = easy;  
    contact_visitors = yes;  
    real_time = of_course;  
    try_visistat = free;  
    setup = no_brainer;  
  
}  
else {  
  
    no_clue = true;  
    i_use_google = sorry;  
  
}  
  
//REAL-TIME WEBSITE TRACKING  
goto = www.visistat.com;
```



Nmap runs on host with the 192.168.1.10 IP. Before starting the TCP port scan, Nmap does some initial tasks such as DNS reverse query of the target IP address that we can ignore for the purposes of this article.

In Figure 2, we see that from packet 58 to packet 67, Nmap starts the TCP SYN scan from source TCP port 47295 to TCP ports 111, 554, 23, etc. In Wireshark's main window, we do not see port numbers but their relevant service name according to standards (e.g. telnet for port 23, HTTP for port 80).

From packet 68 to packet 78 we see how the 192.168.1.1 target device responses to the packets that Nmap has already sent. Nmap has more packets to send but meanwhile the target device responses to the first group of packets. Most TCP destination ports that are not used in the target device reply with a [RST, ACK] packet. For example the reply to packet 63 (a scan to port 443) is packet 73. The most reasonable explanation for this is that the target device does not allow connections through secure http (https).

But, we can also notice that the reply to TCP port 80 (HTTP or practically the Web GUI of the ADSL router) is a [SYN, ACK] packet. As we can recall from the Nmap output, the http port is open. I can assure you that the specific ADSL router has a Web GUI that listens to the standard TCP port 80.

In Figure 3 we can see that Nmap continues the TCP port scanning testing other ports. Most ports reply with a [RST, ACK] packet except the ports that are open waiting for incoming connections. These ports, as the TCP 80 port that we saw above, reply with a [SYN, ACK] packet.

The Ping Scan Traffic

First of all, two essential information about this part of the article:

For security reasons, both the actual IP addresses and host names have been replaced in the Nmap output as well as in the Wireshark output.

If you execute a ping scan on a LAN, the process is different from the one presented here. LAN ping scans are executed using the ARP protocol and not the ICMP protocol presented here.

The following nmap command scans 64 IP addresses, from 5.5.18.1 to 5.5.18.64. The results show that at execution time only 13 hosts were up or, **to be 100% precise**, only 13 hosts answered the Nmap scan!

```
Monastery:Downloads mtsouk$ sudo nmap -sP 5.5.18.1-64
```

```
Starting Nmap 5.21 ( http://nmap.org ) at 2010-12-29 17:32
EET
Nmap scan report for ISP-0592.home.ISP.gr (5.5.18.20)
Host is up (0.0022s latency).
Nmap scan report for ISP-0595.home.ISP.gr (5.5.18.23)
Host is up (0.028s latency).
Nmap scan report for ISP-0597.home.ISP.gr (5.5.18.25)
Host is up (0.027s latency).
Nmap scan report for ISP-0599.home.ISP.gr (5.5.18.27)
Host is up (0.021s latency).
Nmap scan report for ISP-0605.home.ISP.gr (5.5.18.33)
Host is up (0.060s latency).
Nmap scan report for ISP-0610.home.ISP.gr (5.5.18.38)
Host is up (0.061s latency).
Nmap scan report for ISP-0611.home.ISP.gr (5.5.18.39)
Host is up (0.019s latency).
Nmap scan report for ISP-0619.home.ISP.gr (5.5.18.47)
Host is up (0.033s latency).
Nmap scan report for ISP-0621.home.ISP.gr (5.5.18.49)
Host is up (0.018s latency).
Nmap scan report for ISP-0625.home.ISP.gr (5.5.18.53)
Host is up (0.025s latency).
Nmap scan report for ISP-0629.home.ISP.gr (5.5.18.57)
Host is up (0.016s latency).
Nmap scan report for ISP-0631.home.ISP.gr (5.5.18.59)
Host is up (0.018s latency).
Nmap scan report for ISP-0633.home.ISP.gr (5.5.18.61)
Host is up (0.050s latency).
Nmap done: 64 IP addresses (13 hosts up) scanned in 2.84
seconds
```

Filter: !(ip.dst == 239.255.255.250)					▼ Expression...	Clear	Apply
No.	Time	Source	Destination	Protocol	Info		
1379	17.960793	192.168.1.1	192.168.1.10	TCP	441 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1380	17.960795	192.168.1.1	192.168.1.10	TCP	63331 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1381	17.960797	192.168.1.1	192.168.1.10	TCP	49154 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1382	17.960799	192.168.1.1	192.168.1.10	TCP	9099 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1383	17.960801	192.168.1.1	192.168.1.10	TCP	rmi.registry > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1384	17.960802	192.168.1.1	192.168.1.10	TCP	icp > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1385	17.960804	192.168.1.1	192.168.1.10	TCP	32 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1386	17.960806	192.168.1.1	192.168.1.10	TCP	cadlock2 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1387	17.960808	192.168.1.1	192.168.1.10	TCP	scoremgr > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1388	17.960810	192.168.1.1	192.168.1.10	TCP	filenet-pch > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1389	17.960811	192.168.1.1	192.168.1.10	TCP	5962 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1390	17.962254	192.168.1.1	192.168.1.10	TCP	device2 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1391	17.962255	192.168.1.1	192.168.1.10	TCP	irdm12 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1392	17.962257	192.168.1.1	192.168.1.10	TCP	sd > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1393	17.962259	192.168.1.1	192.168.1.10	TCP	10025 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1394	17.962261	192.168.1.1	192.168.1.10	TCP	8007 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1395	17.962263	192.168.1.1	192.168.1.10	TCP	14442 > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1396	17.962265	192.168.1.1	192.168.1.10	TCP	amt.soap-http > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1397	17.962266	192.168.1.1	192.168.1.10	TCP	fcp-addr-srvrl > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1398	17.962268	192.168.1.1	192.168.1.10	TCP	ospf-lite > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1399	17.962270	192.168.1.1	192.168.1.10	TCP	ircu > 47295 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0		
1400	17.966271	192.168.1.10	192.168.1.1	TCP	47295 > xmpp-client [SYN] Seq=0 Win=4096 Len=0 MSS=1460		

Figure 3: More packets from the TCP SYN scan

NEW VERSION!



MORE PACKED!

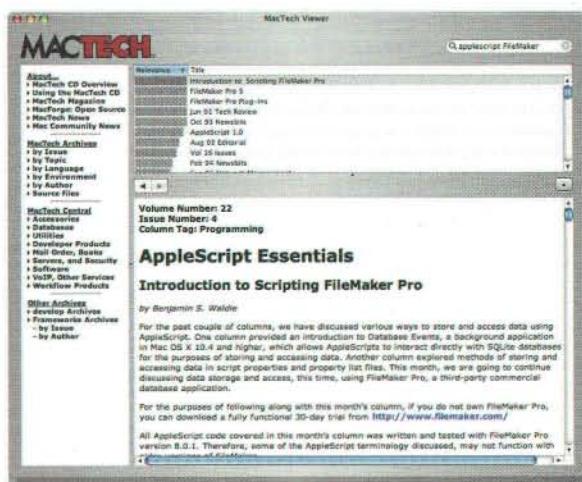
The MacTech DVD - Volumes 1.01-25.12

is packed with more than ever before -- over 3200 articles from more than 290 issues (1984 - 2010) written by over 900 experts, all 29 issues of Apple's *develop*, 21 issues of *FrameWorks* magazine, 100+ MB of source code, MacTech Viewer, working applications, full documentation, demos for techs, **and more!**

Everything is displayed in the very fast, very searchable **MacTech Viewer!** An application that has been designed specifically with Techs in mind. Search quickly through 25 years of great information provided by MacTech. Information to save you time, and make your life easier.



Requires Mac OS X v. 10.4.5 or later



Toll Free 877-MACTECH, Outside US/Canada: 805-494-9797 • <http://www.mactech.com/dvd/>

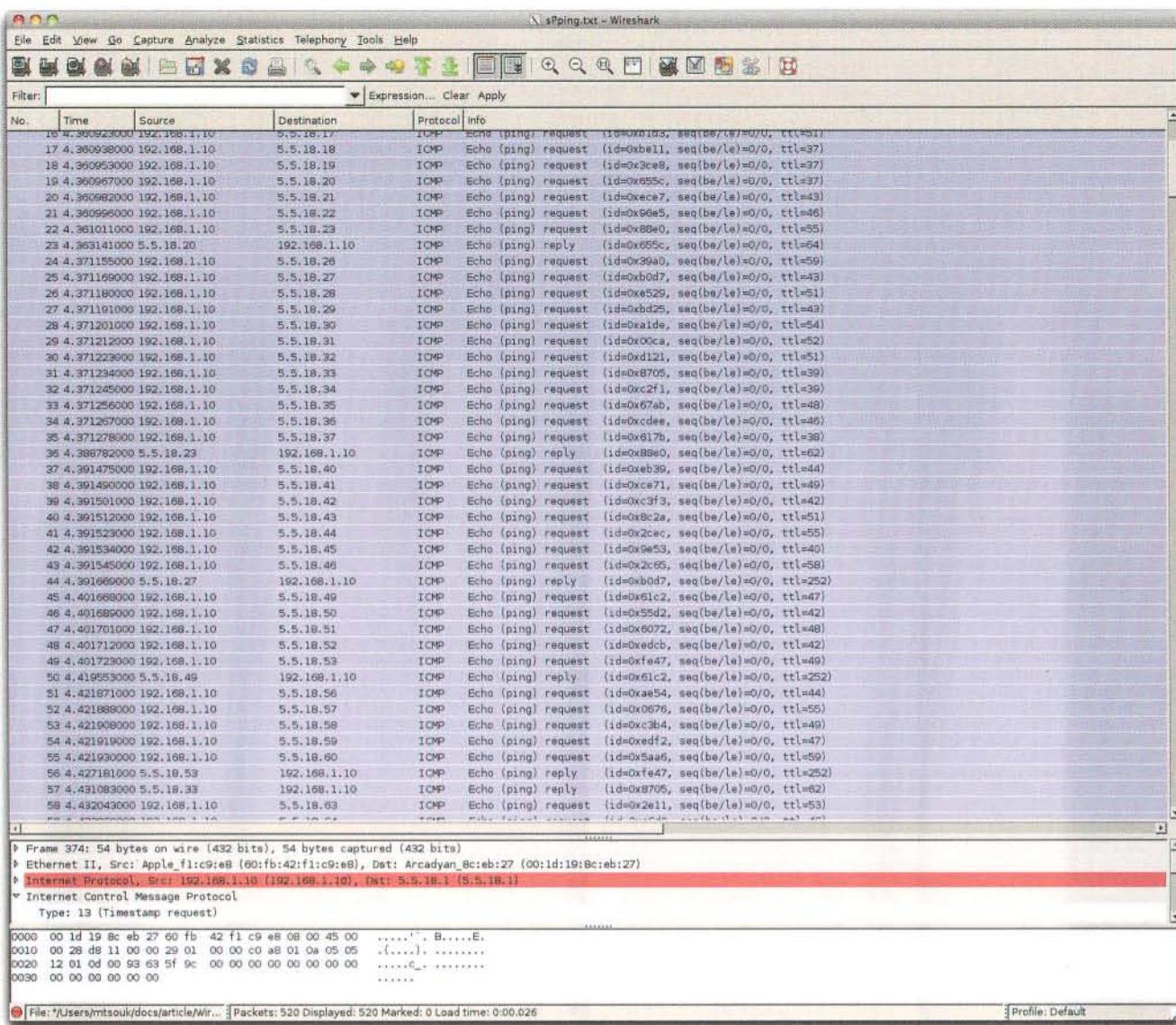


Figure 4: An Nmap ping scan starting with ICMP echo packets

Monastery:Downloads mtsouk\$

Nmap also calculates the round trip time delay (or latency). This gives a pretty accurate estimate of the time needed for the initial packet (sent by Nmap) to go to a target device plus the time that the response packet took to return to Nmap.

Initially, Nmap sends an ICMP echo request to the specified hosts. If there is an ICMP echo reply then that host is considered up. In Figure 4, (following page) we see that packet 19 is the request to host 5.5.18.20 and there is a reply from this host in packet 23. So host 5.5.18.20 is considered up by Nmap and no additional tests are tried on this IP.

The purpose of the Ping test is simply to find out if an IP address is responding or not. Nmap adds some intelligence to the standard ping (ICMP protocol) that we usually execute from our hosts by trying some common TCP ports in case the ICMP request receives no reply, as it can be seen in Figure 5, with hosts 5.5.18.52 and 5.5.18.39. Host 5.5.18.39 replies to the

additional tests whereas 5.5.18.52 sends nothing. So Nmap considers host 5.5.18.39 up and host 5.5.18.52 probably down. What is important for Nmap in a ping scan is not the actual data of the received packets but the existence of a reply packet.

The UDP Scan Traffic

This part of the article will show the Nmap attempt to identify the open UDP ports of the 192.168.1.50 host: a Windows XP Service Pack 3 machine. Please notice that the XP machine runs a firewall.

The executed Nmap command and the results are the following:

```
sudo nmap -sU 192.168.1.50
Password:
```

```
Starting Nmap 5.21 ( http://nmap.org ) at 2010-12-29 17:18
EET
```



usedcisco.com
World's Largest Network Hardware Outlet

World's largest used Cisco outlet

Over 2000 of the most popular parts in stock

SAVE 60 - 90% off list

- **FREE 2 YEAR WARRANTY** with coupon code: MACTECH*
- **FREE SHIPPING** on orders over \$200 (for a limited time only)

Call us: **800.504.7199**

Visit us on the web at: **usedcisco.com**

Just some of the parts we carry....



*To use your coupon, either: 1) Call in your order (800) 504-7199, and mention coupon code MACTECH OR
2) Shop online at usedcisco.com. On the last step of checkout, enter coupon code MacTech in the "Salesperson" field.

Complete your order online (you will not see your discount applied here). We will apply the discount when we process the order, and only charge your card the adjusted total. You will be given a new confirmation as well. Coupon not combinable with any other coupon, discount or special promotion. Coupon not transferable. Coupon applicable to web pricing only.

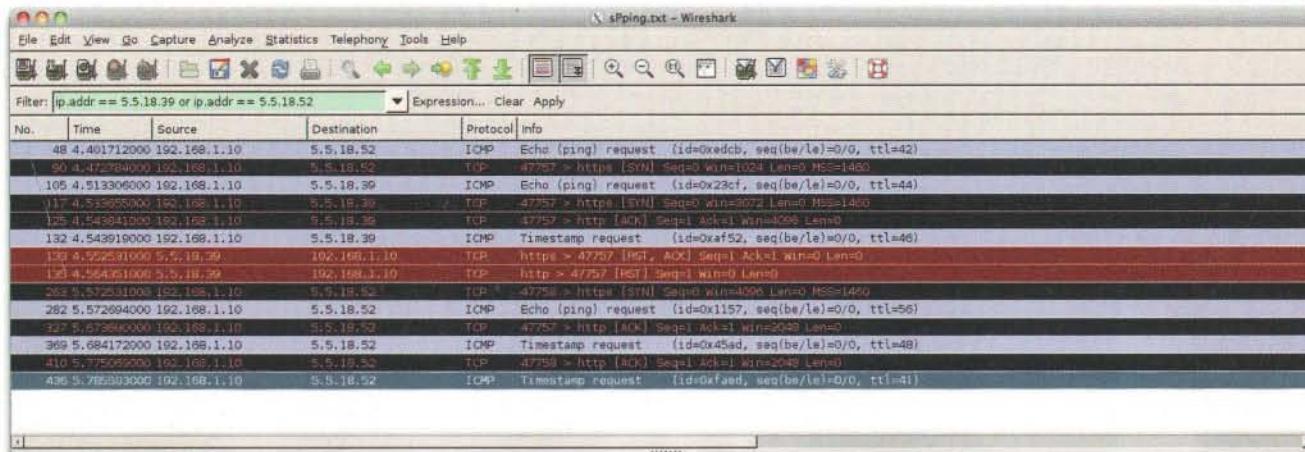


Figure 5: Nmap performing http and https requests

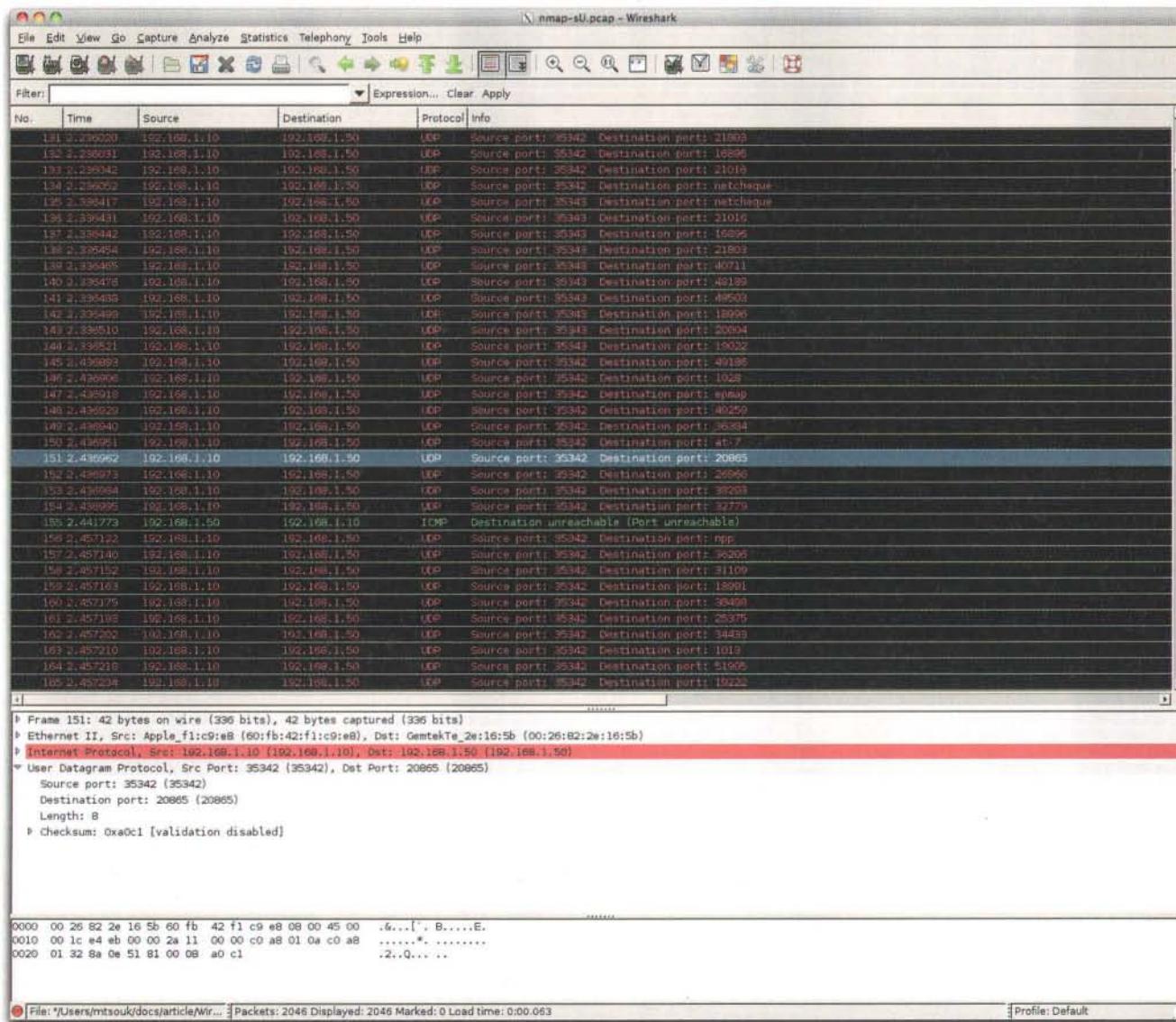


Figure 6: Nmap UDP port scanning

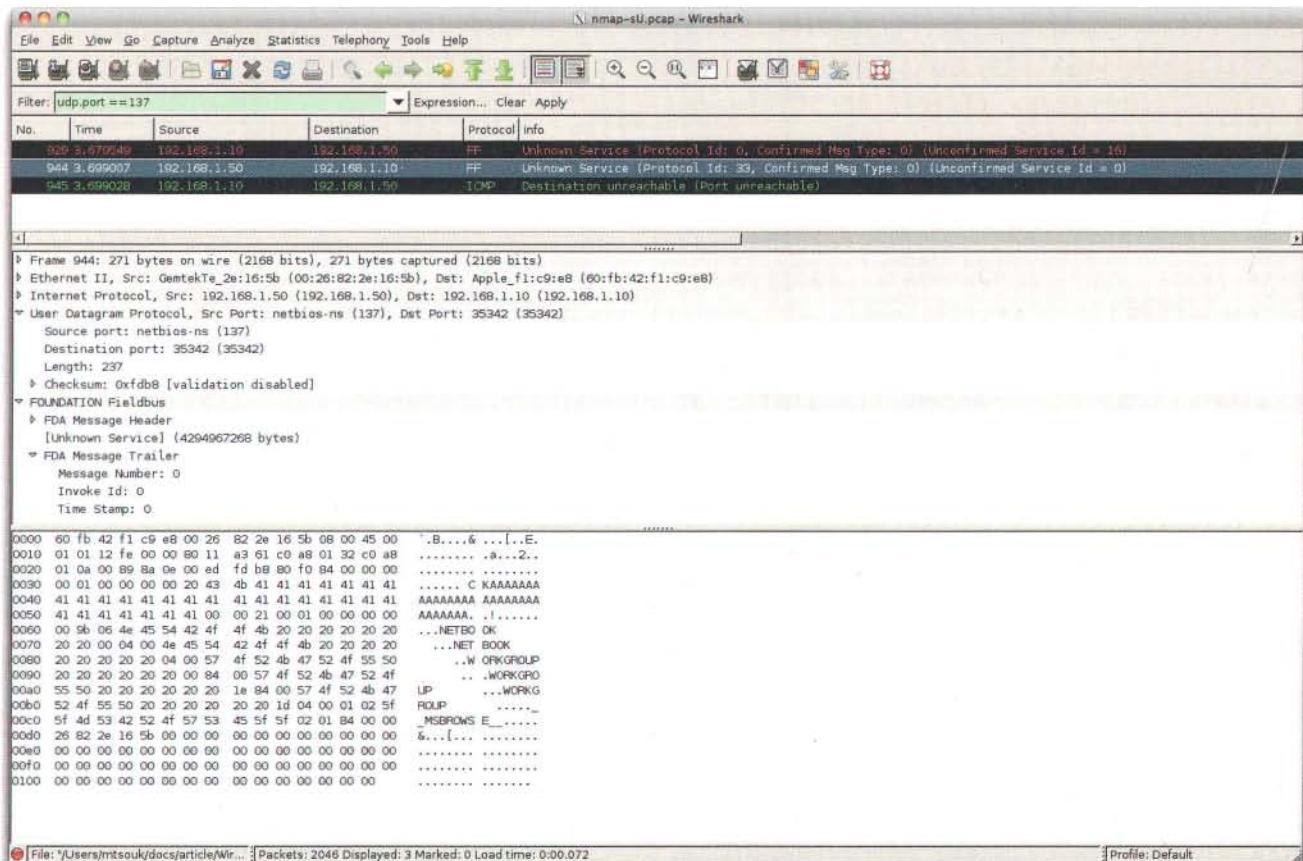


Figure 7: Packets at UDP port 137

B M S

THE LAW OFFICE OF
BRADLEY M. SNIDERMAN

Helping clients with their software legal issues.

- **Trademark and Copyright Registration**
- **Trade Secret Protection**
- **Licensing and Non Disclosure Agreements**
- **Assist with Software Audits**

I am an attorney practicing in Intellectual Property, Business Entity Formations, Corporate, Commercial and E-commerce Law.

Please give me a call or an e-mail. Reasonable fees.

23679 Calabasas Rd. #558 • Calabasas, CA 91302
PHONE 818-706-0631 FAX 818-332-1285 EMAIL brad@sniderman.com



Stellar Drive ToolBox

A set of 12 utilities to optimize, maintain, manage, repair, protect, sanitize your Mac hard drive & volume.

Now only for \$79 MSRP \$99

Free Bonus
\$39 Photo
recovery tool

For 20% Discount
Use Code - DR20MACSP
Offer Valid till 28 Feb 2011
Buy @ www.mac-tools.net

Utilities included in Drive Tool Box



```
Nmap scan report for 192.168.1.50
Host is up (0.041s latency).
Not shown: 996 open|filtered ports
PORT      STATE SERVICE
135/udp closed msrpc
136/udp closed profile
137/udp open   netbios-ns
139/udp closed netbios-ssn
MAC Address: 00:26:82:2E:16:5B (Gemtek Technology Co.)
```

Nmap done: 1 IP address (1 host up) scanned in 14.20 seconds

Nmap UDP port scanning starts by sending UDP packets with no additional data (a.k.a. empty UDP packet) to various ports. In Figure 6 we see that the host sends an ICMP Destination unreachable for UDP at port 135. This means that the port is closed and not filtered by any firewall. If there is no reply at all from the host for a given UDP port then the port is considered open but filtered.

In Figure 7 we see that for UDP port 137 (netbios-ns) there is a reply that states that the host cannot understand the actual netbios packet, so the port is definitely in use.

Summary

You should by now have a pretty good understanding of Nmap traffic. Feel free to analyze and explore other types of Nmap scans using Wireshark in order to test and enhance your skills.

Wireshark is a valuable tool and using it can also be fun.

More articles are coming in the Wireshark series so keep creating network traffic!

Web links and Bibliography

WireShark site: <http://www.wireshark.org/>

Nmap site: <http://www.nmap.org/>

RFCs: <http://www.ietf.org/rfc.html>

TCP tutorial:

<http://www.ssfnet.org/Exchange/tcp/tcpTutorialNotes.html>

Internetworking with TCP/IP, Volume I, Douglas E. Comer,
Prentice Hall

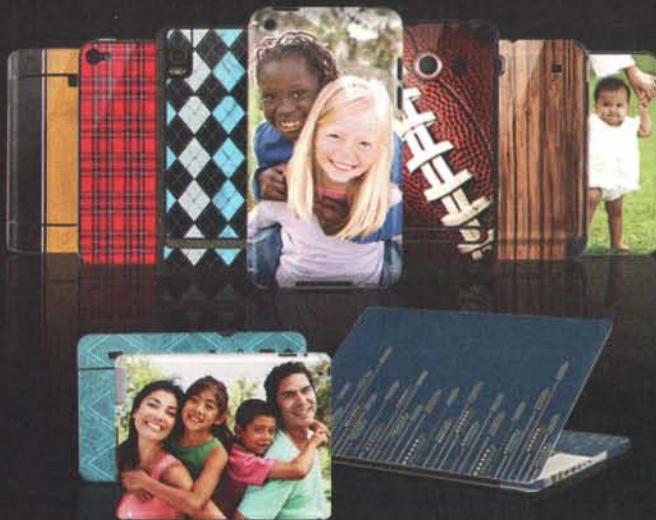


About The Authors

Mihalis Tsoukalos enjoys digital photography, writing articles and programming his iPhone 4 and iPad. He is the author of Programming Dashboard Widgets, an eBook. You can reach him at tsoukalos@sch.gr.

Dimitris Tsoukalos works as a Telecom Engineer and enjoys protocol analysis and packet inspection. You can reach him at dtSoukalos@gmail.com.

CHOOSE A ZAGG® DESIGN OR CREATE YOUR OWN



MAKE YOUR DEVICE ABOUT YOU

www.ZAGG.com

Advertiser/Product Index

Ad Index by Company for: MacTech Mag 27.06 (June/2011)

Absolute Software.....	39
AlertSite.....	34
Audioengine.....	11
Benchmark Email.....	59
BITS Limited.....	24
Brad Sniderman.....	77
Centrify Corporation.....	51
Cocoatech.....	33
codefortytwo software.....	31
Dartware LLC.....	13
Digital Aurum.....	23
DR globalDirect, Inc. d/b/a eSellerate.....	4
DriveSavers Data Recovery.....	62
e3 Software.....	10
Elgato Systems GmbH.....	27
Enterprise Desktop Alliance.....	37
Faronics.....	35
Future Media Concepts.....	63
Gefen Inc.....	18
Group Logic Inc.....	43
Hansaworld.....	IFC
HostGator.....	55
iConnectivity.....	66
iDeveloper TV.....	64
IGC, Inc. / MaxEMail.com.....	28
Insider Software.....	63
IOGEAR.....	1
LC Technology International, Inc.....	57
MacsDesign Studio LLC.....	47
MacTech Conference.....	19
MacTech Domains.....	22
MacTech Magazine.....	73
MacTech Magazine.....	61
Marketcircle Inc.....	21
Microchip Technology Inc.....	33
Micromat, Inc.....	23
Microsoft.....	53
Mindraven.....	65
Newsoft America.....	29
OlympicControls Corp.....	25
Parallels Inc.....	2-3
Pioneer.....	BC
Prosoft Engineering, Inc.....	17
RD Ukraine LLC, dba Readdle.....	32
REAL Software, Inc.....	9
Ruckus Wireless.....	60
SAINT.....	67
SeedCode.....	62
SellYourMac.....	58
Small Dog Electronics.....	IBC
Smile.....	15
Stellar Information Systems Ltd.....	78
Tethras.....	30
TransTech Systems.....	69
TrueShip.....	16
UsedCisco.....	75
VisiStat, Inc.....	71
ZAGG Inc.....	78

Ad Index by Product for: MacTech Mag 27.06 (June/2011)

Accessories • IOGEAR.....	1
Audio Speaker Systems • Audioengine.....	11
Benchmark Email • Benchmark Email.....	59
Billings • Marketcircle Inc.....	21
BookEndz • OlympicControls Corp.....	25
Boot Camp • MacTech Magazine.....	61
Business Management Software • Hansaworld.....	IFC
Centrify Express • Centrify Corporation.....	51
Cisco Equipment • UsedCisco.....	75
CleanMyMac • Digital Aurum.....	23
CrashPlan • codefortytwo software.....	31
Data Recovery • DriveSavers Data Recovery.....	62
Data Rescue Center • Prosoft Engineering, Inc.....	17
Deep Freeze • Faronics.....	35
Direct mail • e3 Software.....	10
Domain Registration • MacTech Domains.....	22
Drive Tool Box • Stellar Information Systems Ltd.....	78
DVI to MiniDisplayPort • Gefen Inc.....	18
Elgato • Elgato Systems GmbH.....	27
Enterprise Desktop Alliance Showcase • Enterprise Desktop Alliance.....	37
ExtremeZ-IP • Group Logic Inc.....	43
Font Agent • Insider Software.....	63
Hosting • HostGator.....	55
iConnectMIDI • iConnectivity.....	66
Identifying Solutions • TransTech Systems.....	69
iDeveloper TV • iDeveloper TV.....	64
InSight • AlertSite.....	34
InterMapper • Dartware LLC.....	13
IT Training • Future Media Concepts.....	63
Law Offices • Brad Sniderman.....	77
Localization Services • Tethras.....	30
MacTech Conference • MacTech Conference.....	19
MacTech DVD • MacTech Magazine.....	73
Manage • Absolute Software.....	39
maxemail.com • IGC, Inc. / MaxEMail.com.....	28
Microchips • Microchip Technology Inc.....	33
Microsoft Office • Microsoft.....	53
Parallels Desktop and Server • Parallels Inc.....	2-3
Pathfinder • Cocoatech.....	33
PDF Expert • RD Ukraine LLC, dba Readdle.....	32
PDFFPen • Smile.....	15
PHOTORECOVERY®/FILERECOVERY® • LC Technology International, Inc.....	57
PrestoBizCard • Newsoft America.....	29
REAL Studio Web Edition • REAL Software, Inc.....	9
Ruckus Wireless • Ruckus Wireless.....	60
Security Testing Tools • SAINT.....	67
Sell Your Mac • SellYourMac.....	58
SmallDog.com • Small Dog Electronics.....	IBC
Smart Strips • BITS Limited.....	24
TechToolPro • Micromat, Inc.....	23
Telestream ScreenFlow • DR globalDirect, Inc. d/b/a eSellerate.....	4
TrueShip Shipping System • TrueShip.....	16
UBB.threads • Mindraven.....	65
Various Audio Products • Pioneer.....	BC
VisiStat • VisiStat, Inc.....	71
Web Help Desk • MacsDesign Studio LLC.....	47
Zagg Skins • ZAGG Inc.....	78
Zulu iCal Server • SeedCode.....	62

MACTECH SPOTLIGHT Kirill Luzanov

Binary Fruit

<http://www.diskradar.com>

What do you do?

I'm the founder of Binary Fruit, a software startup that I started in 2009. I write code and design UI. I'm a professional software/system architect. Design is my hobby. DiskRadar is currently main product.

How long have you been doing what you do?

I have started my career of software developer in 1997, as a SCO Unix developer. So, I have 14 years experience in IT already. Last 5 years, before Binary Fruit, I worked as a chief software/system architect. Binary Fruit is my first independent startup.

What was your first computer?

An IBM PS/2 with 286 processor at my school. The first computer that I owned was in 1996; a Pentium 100 MHz based PC with 16MB RAM and 1 GB Seagate HDD powered by Win95. They were wonderful, wonderful times... :)

Are you Mac-only, or a multi-platform person?

I feel at home both on OS X, Windows and Linux/Unix systems. I have started from MS DOS and Win3.11 at my school. Then from 1995 - guess what?... - yep - Win 95. In 1997 (as I said above), I have started professional career as Unix developer. My first Linux installation was in 1998. Between 1999 and 2006 I was a Windows developer. My first real acquaintance with Macs was in 2006. So, I'm definitely a multi-platform person and I respect all platforms. But for the last few years, I'm using Macs 95% of the time.

What is the advice you'd give to someone trying to get into this line of work today?

Think different and never stop believing in yourself. Never stop—the road appears under your feet while walking!

What's the coolest tech thing you've done using OS X?

Undoubtedly DiskRadar! This project had a lot of both technical and design/UX challenges.

Technical: modern drives contains terabytes of data in millions of files, so it is definitely not easy in few seconds to scan, analyze/index and visualize all this data on average computer. Other interesting thing is disk health diagnostics. S.M.A.R.T. specification by itself is really not consistent, complex and poorly specified. So, it was not easy and very interesting to write disk health analysis and failure prediction routines that based on statistics, heuristics and fuzzy logic. Moreover - "pure" S.M.A.R.T stuff is too complex for average users, so there was second challenge - UX and design of the disk health diagnostics stuff. I spent a lot effort in designing disk health infographics, and now I think DiskRadar is the most intuitive and user-friendly tool on the market. And at the same time (important!)

the application provides access to all sufficient hard drive diagnostic data to satisfy any system administrator or techie.

Coolest Ever?

"Active objects" powered multithreaded template C++ library. I wrote it in 2003 as part of labs automation software. As far as I know, software based on it is still working, for example, in Daimler AG research labs and many other places.

Where can we see a sample of your work?

www.diskradar.com

The next way I'm going to impact the Mac universe is:

Continue to improve DiskRadar. Make best-in-class software.



If you or someone you know belongs in the MacTech Spotlight, let us know! Send details to editorial@mactech.com

Mac shopping made easy.

Grab that to-do list, and prepare for some one-stop shopping at [Smalldog.com!](http://Smalldog.com)

Bundles simplify the buying process

Mac bundles (think Mac + RAM + AppleCare + external hard drive, etc.) not only include **everything you need**, but also **save you money**.

Visit » Smalldog.com/specials

Macs from under \$500

We carry all **current Macs** as well as **used, refurbished and closeout models**, so there is a Mac for any budget.

Visit » Smalldog.com/macs

Free shipping over \$200

It's true—we provide **free, same-day ground shipping** on every item over \$200 every day.

Tax-free shopping

Purchases outside of Vermont are always shipped **tax-free**.



✓ 13" MacBook Pro +
Chill Pill® mobile speakers



**Small Dog
Electronics**

Always By Your Side

www.smalldog.com

800-511-MACS

Apple Specialist

Bundles

Macs

Free Shipping

Tax-Free

Pioneer



AppRadio™

A revolutionary way to use apps in the car

RETHINKING CONNECTIVITY

www.pioneerelectronics.com/appradio

PIONEER is a registered trademark of Pioneer Corporation. AppRadio is a trademark of Pioneer Corporation. ©2011 Pioneer Electronics (USA) Inc.
Limited apps are compatible with this model. Certain functions such as video playback and keyboard input are only available while parked.
For more information, see www.pioneerelectronics.com/appradio.